US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
Total Environmental Restoration Contract
USACE Contract Number: DACW33-03-D-0006
Task Order No. 0001

AFTER-ACTION REPORT
2004 NEW BEDFORD HARBOR REMEDIAL ACTION

New Bedford Harbor Superfund Site
New Bedford, MA

November 2005

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ACRONYMS AND ABBREVIATIONS

AAR	*After Action Report*
ACGIH	American Conference of Governmental Industrial Hygienists
BD/DA	Basis of Design/Design Analysis
C	Centigrade
Cd	cadmium
CO	carbon monoxide
CDF	Confined Disposal Facility
cfm	cubic feet per minute
Cu	copper
Cr	chromium
cy	cubic yards
DAF	dissolved air flotation
DDA	Debris Disposal Area
DFW	Definable features of work
DMU	Dredge Management Unit
DO	dissolved oxygen
ENSR	ENSR International
EPA	US Environmental Protection Agency
$Fe_2(SO_4)_3$	ferric sulfate
FeS	ferric sulfide
fpm	feet per minute
frac	fractionation
FSP	Field Sampling Plan
ft.	feet (or foot)

ACRONYMS AND ABBREVIATIONS

FW	Foster Wheeler Environmental Corporation
GAC	granulated activated carbon
GC/MD	Gas Chromatographic/Multi-Detector Detection
GC/MS	gas chromatography/mass spectrometry
gpm	gallons per minute
H^+	hydrogen ion
HCN	hydrogen cyanide
HDPE	high-density polyethylene
hp	horsepower
HS^-	bisulfide ion
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
IDLH	Immediately Dangerous to Life or Health
Jacobs	Jacobs Engineering Group
J	estimated concentration
mg/m^3	milligrams per cubic meter
mg/kg	milligrams per kilogram
mm	millimeter
NAE	U.S. Army Corps of Engineers – New England District
NaOH	sodium hydroxide
Na_2SO_4	sodium sulfate
NBH	New Bedford Harbor
ng/m^3	nanograms per cubic meter
NIOSH	National Institute of Occupational Safety and Health
NPL	Superfund National Priorities List

ACRONYMS AND ABBREVIATIONS

NTU	Nephelometric Turbidity Units
OBZ	operator breathing zone
O&G	oil and grease
O&M	operation and maintenance
OU	operable unit
ORP	oxidation reduction potential
OSHA	Occupational Safety and Health Administration
OWS	oil/water separator
Pb	lead
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PETS	Public Exposure Tracking System
PFD	Process Flow Diagram
PHA	process hazard analysis
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
psig	pounds per square inch gauge
PUF	polyurethane foam
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RAM	respirable aerosol monitor
RMS	Resident Management System
$S^{=}$	sulfide ion
Sevenson	Sevenson Environmental Services

ACRONYMS AND ABBREVIATIONS

Site	New Bedford Harbor Superfund Site
SSHP	Site-Specific Safety and Health Plan
STEL	Short Term Exposure Limit
T&D	transportation and disposal
TCE	trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TDH	total dynamic head
TERC	Total Environmental Restoration Contract
TOC	total organic carbon
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
USACE	United States Army Corps of Engineers
VOC	volatile organic compound
WWTP	Wastewater Treatment Plant
µg/L	micrograms per liter

1.0 INTRODUCTION

The purpose of this *After Action Report* (*AAR*) is to summarize the key activities associated with remediation of the New Bedford Harbor Superfund Site (Site) during the 2004 Field Season. This *AAR* consists of six Sections and twelve attachments. This Introduction focuses primarily on administrative and background aspects of the project. The Scope of Work performed during 2004 is presented in Section 2.0 and is organized based on work defined by the Initial Task Order and subsequent Modifications. Section 3.0 presents a discussion of the various studies, analyses, and data performed or developed by the Jacobs Engineering Group (Jacobs) team during 2004. As 2004 was a start-up year, procedures and approaches evolved as information and experiences were gained; these are discussed in Section 4.0 and possible program improvement activities are described. The aforementioned Sections 2.0, 3.0, and 4.0 comprise the bulk of the *AAR*, and the information presented therein is supported by several referenced Attachments that are variously included at the end of this document or bound separately. Finally, major conclusions and cited references are presented as Sections 5.0 and 6.0, respectively.

1.1 PROJECT BACKGROUND

The New Bedford Harbor (NBH) Superfund Site is located in Bristol County, Massachusetts, approximately 55 miles south of Boston, and is bordered by the towns of Acushnet and Fairhaven on the east side of the harbor, and by the City of New Bedford and the Town of Dartmouth on the west side of the harbor. From north to south, the Site extends from the upper reaches of the Acushnet River estuary, through New Bedford's commercial port and into Buzzards Bay. The southern extent of the Outer Harbor and the Site is an imaginary line drawn from Rock Point (the southern tip of West Island in Fairhaven) southwesterly to Negro Ledge and then southwesterly to Mishaum Point in Dartmouth.

Industrial and urban development surrounding the NBH Site have resulted in sediments becoming contaminated with polychlorinated biphenyls (PCBs) and heavy metals, with concentration gradients generally decreasing from north to south. Identification of PCB-contaminated sediments and seafood in and around New Bedford Harbor was first made in the mid-1970s as a result of US Environmental Protection Agency (EPA) region-wide sampling programs. Based on these sampling programs, the determination was made that the principle sources of PCB contamination were from two electric capacitor manufacturing facilities located adjacent to the Acushnet River/New Bedford Harbor waterway. The primary source of PCB contamination emanated from the Aerovox facility, located near the northern boundary of the Site. PCB wastes were discharged from Aerovox's operations directly into the Upper Harbor through open trenches and discharge pipes, or indirectly throughout the Site via the City's sewage system. Secondary inputs of PCBs were also made from the Cornell Dubilier Electronics, Inc. facility just south of the New Bedford Hurricane Barrier. These electric capacitor manufacturing facilities operated from the 1940s into the 1970s. The NBH Site was added to the Superfund National Priorities List (the NPL) in September 1983.

The NBH Site has been divided into three areas - the Upper Harbor, the Lower Harbor, and the Outer Harbor - consistent with geographical features of the area and gradients of contamination (Figure 1-1). The boundary between the Upper Harbor and the Lower Harbor is the Coggeshall Street Bridge where the width of New Bedford Harbor narrows to approximately 100 feet. The boundary between the Lower Harbor and the Outer Harbor is the 150 foot wide opening of the New Bedford Hurricane Barrier. The operable unit (OU) designation for the Upper and Lower Harbors, and a small portion of the Outer Harbor is OU #1, as defined by the cleanup goals in the *Record of Decision* (EPA 1998).

The Upper Harbor comprises approximately 187 acres, with current sediment PCB levels ranging from below the laboratory detection level to approximately 10,000 parts per million (ppm); prior to the removal of the most contaminated Hot Spot sediments in 1994 and 1995 as part of the Site's first cleanup phase, sediment PCB levels were reported higher than 100,000 ppm in the Upper Harbor. The Lower Harbor comprises approximately 750 acres; in some of this area, sediment PCB levels range from below detection to over 100 ppm. Sediment PCB levels in the Outer Harbor are generally low, with only localized areas of PCBs in the 50-100 ppm range near the Cornell-Dubilier plant and the City's sewage treatment plant's outfall pipes.

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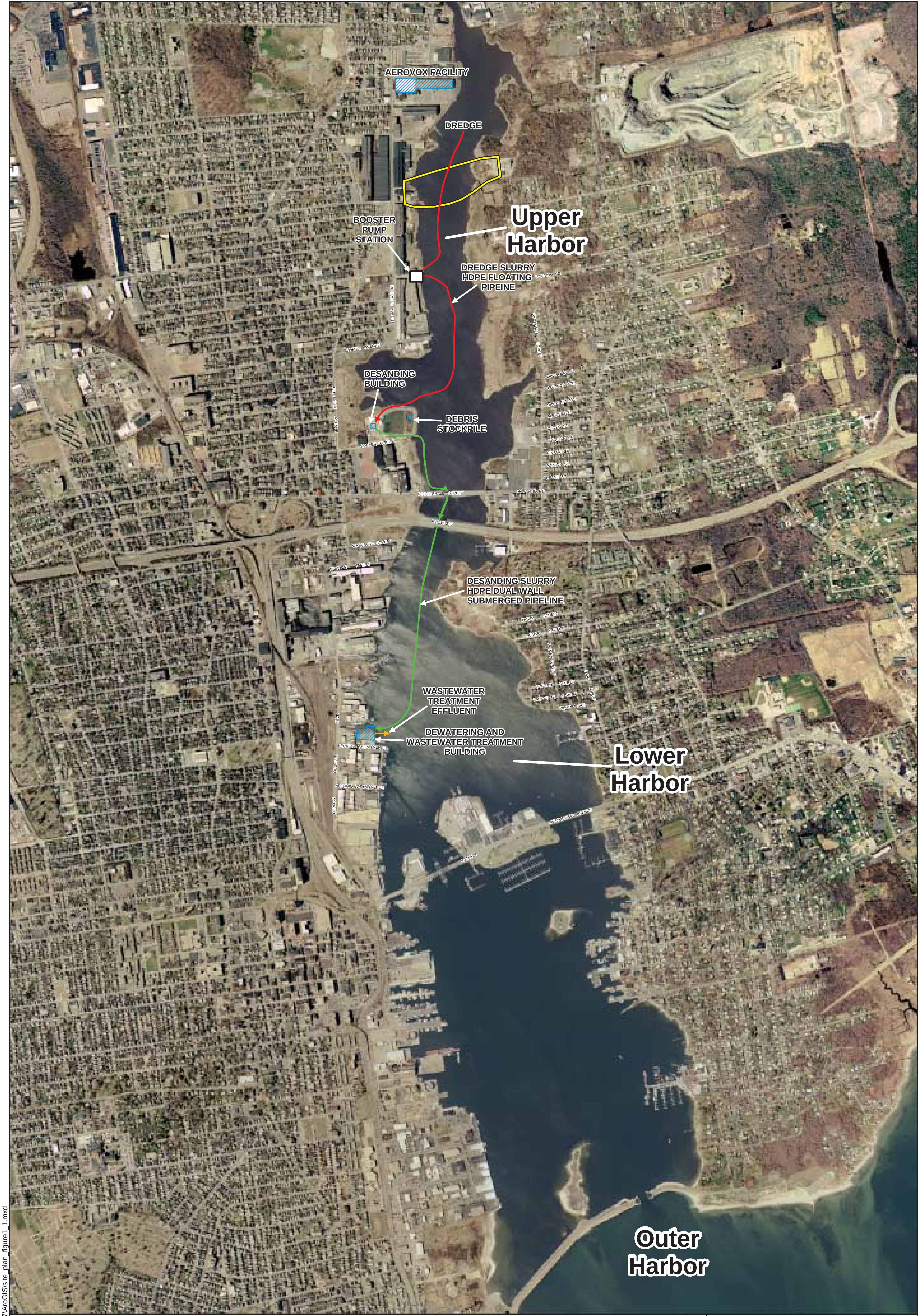
Figure 1-1 Site Plan



Aerial Photography MASSGIS 2003

Legend

Piping

Desanded Sediment Slurry

Dredged Sediment

N-Star Buried Cable Perimeter

Building

N

0 750 1,500 Feet

1:17,991

JACOBS

Site Plan

New Bedford Harbor Superfund Site
September 2004

NAME: jpiccuito DATE: 09/17/2004

Figure 1-1

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1.2 TERC CONTRACT

The EPA and the U.S. Army Corps of Engineers – New England District (NAE) entered into an Inter-Agency Agreement in February 1998 that gives NAE responsibility to provide technical assistance to EPA for the NBH Site. In October 1998, EPA authorized NAE to perform Remedial Design activities associated with the Upper Harbor and Lower Harbor cleanup. All remedial actions undertaken at the Site by the Jacobs team during 2004, were accomplished under U.S. Army Corps of Engineers – New England District Total Environmental Restoration Contract (TERC) No. DACW33-03-D-0006. Through this contract, during 2004 NAE issued an Initial Task Order (Task Order 1) and five Modifications to Jacobs to perform the work; the activities associated with Task Order 1, including subsequent Modifications, are described later in this Section. Additional services related to the remediation effort are being conducted by ENSR and Battelle under separate contract to the NAE. ENSR is providing sampling and analytical services fro groundwater, water column monitoring, and post dredge confirmation sediment sampling. Battelle is providing data base management, data validation services, and is executing the Long-Term Monitoring Program for the project.

1.3 PRE-EXISTING SITE FACILITIES

Prior to Jacobs work at the Site, a number of improvements had been made by others at Areas C and D, including the Area C holding cells, the various Area C office trailers, and the Area D Dewatering Building. These facilities were utilized by Jacobs during 2004 remedial actions. In addition, utilities (public water, sewer, power) were previously installed at the Site to support the remedial activities that occurred prior to 2004. To the extent possible, these utilities were utilized for the remedial action work under this contract.

1.4 INITIAL TASK ORDER SCOPE OF WORK

Tasks covered under the Initial Task Order were primarily administrative and professional in scope to enable project familiarization and planning activities for the 2004 field season to occur. They were performed during the first few months of 2004, primarily February through May. Principal activities included reviewing existing documents, preparing an *Execution Plan*, and revising site plans. In addition, various meetings were held between NAE and Jacobs to coordinate these activities.

In the period from December 1998 through June 2003, Foster Wheeler Environmental Corporation (FW) developed Remedial Designs for the NBH Site. Eight key FW design documents were reviewed by the Jacobs team, as these summary reports produced by FW generally were intended to provide the basis for subsequent Remedial Actions to be performed at the NBH Site. These documents were reviewed not only to gain insight into project background and existing information, but also to enable Jacobs to identify areas where proposed design aspects or activities could be improved.

Following review of the FW design documents, Jacobs prepared an *Execution Plan* to describe major administrative and technical aspects of proposed fiscal year 2004 and 2005 remediation project activities. With respect to administrative aspects, the *Execution Plan* detailed project organization, office systems, data management, cost accounting and control procedures, and schedule. The bulk of the *Execution Plan* described the proposed scope of work proposed for 2004/2005, including the design, installation, and operation of dredging equipment (barges, pumps, and pipelines), desanding equipment, dewatering equipment, and wastewater treatment equipment, and a description of activities such as material handling, air emission controls, and winter shutdown. The *Execution Plan* also detailed environmental sampling of various media, quality control practices, health and safety protocols, and community relations concerns in support of the various technical activities to be performed.

The final activity associated with the Initial Task Order was revision of five Site Plans initially prepared by FW (*Construction Quality Control Plan*, *Field Sampling Plan* (*FSP*), *Quality Assurance Project Plan* (*QAPP*), *Regulatory Compliance Plan*, and *Transportation & Temporary Storage Plan*), the extensive expansion of the *Site-Specific Safety and Health Plan* (*SSHP*) to address several additional topics, and the creation of an *Environmental Protection Plan*.

1.5 MAJOR TASK ORDER MODIFICATIONS

Modification 1 had a relatively narrow focus. Work performed under this Modification was limited to the design activities associated with the structures, equipment, instrumentation, and other improvements, as well as selected procedures and interactions, associated with proposed remediation processes and support facilities. These design activities culminated in the preparation and submittal of planning documents and other materials to NAE for review and approval.

In preparation for subsequent processing of contaminated sediments, activities performed under Modification 2 included general mobilization, construction of support facilities, installation of dredges, pumps, pipelines, and process equipment, and completion of a Dewatering Facility Air Emissions Contingency Plan.

Modification 3 was the most significant Modification under Task Order 1 during 2004. Submitted to NAE by Jacobs on August 13, 2004 as Request for Proposal No. 4, this Modification provided the basis for performing the bulk of physical remediation activities commencing in late Summer 2004. Tasks executed under Modification 3 between late August and mid-November included system start-up and shakedown, dredging debris and contaminated sediments from Confined Disposal Facility (CDF) Cell #1 and Dredge Management Unit (DMU)-2, providing coarse and fine material separation at Area C, dewatering sediments and treating filtrate at Area D, transporting and disposing of Toxic Substances Control Act (TSCA) filter cake from Area D, and performing sample collection, analysis, and reporting. This Modification also provided for winter shutdown, general Site operations and maintenance through both the processing period and the winter months, and proposal preparation for future activities.

Modification 4, submitted to NAE on October 12, 2004 as Request for Proposal No. 5, had as a primary focus support functions associated with ongoing remediation activities being performed under Modification 3. Modification 4 principally allowed the following activities to occur in response to situations that occurred during the dredging and handling of contaminated sediments: expedited ambient air monitoring lab analysis;

system modifications in response to elevated hydrogen sulfide concentrations at Area C; resources to safely cross an unidentified pipeline; improvement of phone system and local area network infrastructure; and relocation of booster pumps.

Pursuant to Request for Proposal No. 6, on October 14, 2004 Jacobs submitted a Proposal to NAE that became Modification 5. This Modification was modeled on Modification 3, and basically allowed for performing up to an additional 11 days of environmental dredging, desanding/dewatering, wastewater treatment, transport, disposal, and several other tasks associated with the removal of contaminated sediments from DMU-2.

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2.0 SCOPE OF WORK PERFORMED

Section 1.0 described the contractual arrangement for work performed during 2004 and introduced the activities associated with the Initial Task Order and the five subsequent Modifications. This Section is organized based on the aforementioned contract elements, and presents a detailed discussion of work activities performed under Task Order 1, including its five 2004 Modifications. To assist in obtaining an introductory overview of the work performed, a chronology of this past year's activities is presented in Attachment A, Summary Table of 2004 Activities.

2.1 INITIAL TASK ORDER

As noted previously, principal activities associated with the Initial Task Order included reviewing existing documents, preparing an *Execution Plan*, and revising site plans; project team coordination meetings were held in support of these efforts.

2.1.1 Document Review

Jacobs gained a historical and technical understanding of the Site, including institutional framework, contaminant characterization and delineation, and preliminary remedial design, through a review of existing pertinent design and data summary documents prepared by FW. The Team reviewed the following FW documents:

- *Final Dredging Basis of Design/Design Analysis (BD/DA) Report* (October 2002);
- *Dredge & Excavation Specifications* (October 2002);
- *Final Excavation BD/DA Report* (October 2002);
- *Final BD/DA, Design Drawings, and Specifications for the Desanding and Dewatering Facilities* (December 2002);
- *Final BD/DA, Design Drawings, and Specifications for the Water Treatment System* (June 2002);
- *Final Confirmatory Sampling Approach Technical Memorandum* (July 2002);
- *Final Volumes, Areas and Properties of Sediment By Management Units Technical Memorandum* (June 2003); and
- *Draft Data Interpretation* Report (June 2002).

Following review, the Jacobs team utilized these existing documents as reference sources when subsequently developing the project *Execution Plan*.

2.1.2 Meetings

Upon review of the existing project documents, the Jacobs team attended a series of planning meetings with NAE and EPA. As a consequence of these discussions, consensus was reached for the dredging and material processing technologies and strategies to be implemented for the initial Harbor remediation in 2004. The decisions reached at these meetings became the basis for development of the project *Execution Plan*.

2.1.3 Execution Plan

The outline of the *Draft Execution Plan* was reviewed by NAE and EPA at a project kickoff meeting held in New Bedford on March 24, 2004. Specific details were discussed that were critical to successfully fast track the design and implementation work necessary to prepare for the 2004 dredging season.

A *Draft Execution Plan* was submitted to NAE and EPA on April 16, 2004. The plan included the following major sections:

- Introduction
- Project Description
- Scope of Work
  - Design (including process flow diagrams)
  - Treatability Study
  - Field Implementation
  - Mass Balance
  - Winter Shutdown
  - 2005 Field Season Plans
- Environmental Sampling
  - Air Monitoring

- Wastewater Effluent Sampling
- Dewatered Sediment Sampling

- Quality
- Health and Safety
- Project Organization
- Office Systems
- Data Management
- Costs
- Schedule
- Community Relations

The *Execution Plan* was finalized following an interactive review session with NAE and EPA. The finalized plan was distributed to the project team on July 21, 2004. The document has served as the principal basis for design, implementation, and performance activities for the 2004 field season. Engineering design details and equipment specifications submittals were indexed in accordance with the *Execution Plan* subsections. In addition, the project-specific Definable Features of Work, the basis for the quality control inspection process, were developed from the major work elements described in the *Execution Plan*.

2.1.4 Revise Site Plans

Existing project planning documents (site plans) prepared by Foster Wheeler were revised by the Jacobs team, making them up to date with current project objectives, selected remediation methodologies, and project personnel named to execute the work. The revisions made to each document were reviewed by NAE and EPA before a final document was produced and distributed. The specific documents revised by Jacobs were identified in Subsection 1.4.

2.2 MODIFICATION 1

Modification 1 focused on design activities and submittals, as discussed below.

2.2.1 Submittals

The project submittal list was developed by Jacobs and NAE's Project Engineers at the resident office. The submittal list was entered into the United States Army Corps of Engineers (USACE) Resident Management System (RMS) data base by the Resident office, thereby establishing the official submittal register for the project. Jacobs utilized RMS to prepare transmittal forms (ENG 4025) and to track submittal review and approval status.

The submittal register was developed using the *Execution Plan* as the guidance document. The numbering sequence of the sections and subsections within the *Execution Plan* were used as the reference section number and "specification paragraph number" in the submittal register.

The materials and equipment provided for the dredging and sediment processing operations at the Site were assembled as temporary systems, to be removed and retained by Sevenson Environmental Services (Sevenson) at the conclusion of the project. As such, many of the engineering details for the equipment and material used were submitted to NAE on a 'for information only' basis and did not require governmental approval prior to construction. Furthermore, to expedite the submittal review process, an "on board review" system was established whereby design information was reviewed by NAE project engineers during the mobilization phase of the project.

2.3 MODIFICATION 2

Modification 2 allowed activities such as mobilization, construction, and installation of equipment to occur in support of subsequent contaminated sediment processing. Funding for necessary procurement actions, leased site vehicles, safety supplies, staff travel requirements and additional labor hours in support of the *Air Monitoring Plan* development was also provided under this Modification. These activities are described in the following four Subsections.

2.3.1 General Mobilization

This task provided funding for the Jacobs team to complete many logistical arrangements required to initiate the 2004 field season, which started in June 2004. Office operational systems (i.e., utility, telephone, computer lines, etc.) for Jacobs and Sevenson were initially established within two vacant single-wide office trailers on site, and a new office trailer was placed by Sevenson for their use. During this time period (June to September, 2004), Tetra Tech FW, Inc. continued to occupy the larger double-wide office trailer on site. Following Tetra Tech's departure in September 2004, Jacobs occupied their former offices and one single-wide trailer; Sevenson continued to occupy a second single-wide trailer and their new trailer.

2.3.2 Dredge, Treatment Train, and Pipeline Installation

The Sevenson-owned treatment equipment (e.g., desanding, dewatering, and wastewater system components) and the dredge slurry pipelines were mobilized and installed from June 2004 through August 2004. Each of the system components was assembled simultaneously during the mobilization period. Sevenson utilized local union resources and several pieces of rented heavy equipment (from local rental outlets) during the assembly period. The lists below detail the major features of each system. Updated Process Flow Diagrams (PFDs) for Area C, including dredging, ferric sulfate injection, booster pumps and desanding operations, and Area D, dewatering and wastewater treatment, are included in Attachment B.

<u>Dredge System</u>

- Three dredges, a Mudcat dredge and two H&H dredges, were initially mobilized for dredging within DMU-2. A fourth dredge was later added by Sevenson to provide redundant capacity for the Mudcat, since the H&H dredges could not consistently produce enough flow and pressure to keep the pipeline clear of sediment following the necessary modifications to the dredge pipeline.
- A smaller 8-inch H&H dredge was placed within the Sawyer Street Cell #1 for hydraulic dredging within the cell.
- Steel sheet piles were installed along the perimeters of DMU-2 to enable connection of the dredge pulling cables and attachment of the perimeter silt fence and oil booms.

The sheets were approximately 3 feet wide (actually 2 piles welded together) and 30 feet long. The piles were placed at 50-foot intervals parallel to the north-south axis of the harbor, and 100-foot intervals in an east-west direction. A total of 30 piles were installed.

- Sheet piles were also driven on the north and south shores of Area C Cell #1 and connected with a wire cable. The guide cable on the dredge was tied off at 90 degrees to the shore cables for pulling the dredge in a north-south orientation through the cell.

Pipeline

All slurry pipelines are constructed of high-density polyethylene (HDPE). The pipe was delivered to the job site in 50-foot lengths and field welded using a butt fusion welder. Descriptions of the various segments of pipeline assembled are included below.

10-inch Single Wall Schedule SDR 15.5 80 HDPE Pipeline

- Assembly of three, 1,000-foot pipelines was completed at the Aerovox parking lot. The pipe was butt-welded into 250-foot sections with connecting flanges welded onto each end. Quality control pressure testing was completed on 30 percent of the 250-foot lengths of pipe. The pipelines were deployed into the harbor as each 250-foot section was flanged together.
- The pipelines were connected to the dredges in DMU-2, and each pipeline was routed from a dredge to the Manomet Booster Pump Station located at the end of Manomet Street.
- Two, 1,500-foot sections of 10-inch single wall HDPE were installed from the Manomet Booster Pump Station to the manifold adjacent to the Area C Desanding Building.

12-inch Schedule 80 SDR 13.5 HDPE x 18-inch Schedule 40 SDR 26 HDPE Dual Wall Pipeline

- A section of 12-inch by 18-inch dual wall HDPE pipeline over 5,000 feet long was installed from the slurry transfer pumps at Area C to the dewatering system at Area D. The majority of this pipeline was permanently anchored to the bottom of the Harbor using a dual anchor system (one anchor on each side of the pipe connected by a nylon strap) at 42 foot spacing. The As-built Drawing of this pipeline location from the I-195 Bridge to the Area D bulkhead is included as Drawing 12 in Attachment B.

Desanding

- Two desanding units were installed, with each connected to a slurry pipeline. The desanding units consisted of mix tanks, fine and coarse screen shakers, hydrocyclones, and transfer pumps.
- The desanding units were placed on an existing asphalt pad that was expanded at Area C. Following set up of the units, a temporary structure (Desanding Building) was erected over them. The temporary structure was manufactured by the RUBB Company and was assembled under the supervision of a RUBB Company representative. The RUBB building is 90 ft. wide, 140 ft. long, and 36.5 ft. high at the peak of the roof. Anchors were driven along all the four sides of the building. The load bearing capacity of the building was designed for the typical New Bedford area wind and snow loads.

Dewatering

- The dewatering equipment was installed at Area D within the Dewatering Building recently constructed by NAE. The equipment consists of agitated mix tanks (feed tanks), fast feed pumps, polymer injection pumps, recessed chamber filter presses, and three 25,000-gallon filtrate tanks.
- Other equipment associated with the dewatering operation includes a filter cake conveyor system, stockpile maintenance equipment (bobcat loader), and a 5-cubic yard front end loader to load the waste hauling trucks.

Wastewater Treatment

- The wastewater treatment equipment was also installed within the Dewatering Building at Area D. The system consists of oil/water separators, dissolved air flotation (DAF) units, polymer injection system for precipitation of metals, bag filters, sand filters, and granular activated carbon filters.
- The wastewater treatment system was designed with a peak capacity of 2,000 gallons per minute (gpm).
- System discharge was directed to an existing harbor outfall connection installed when the Dewatering Building was constructed. An outfall pipe was installed as part of the pipeline installation, anchored to the bottom, and turned up at a 45 degree angle at the discharge end. The outfall pipe discharges approximately 20 feet east of the Area D Pier.

2.3.3 Truck Scales

During the 2004 dredging season, truck scales were used at both Area C and Area D for the purpose of weighing material prior to either offsite shipment (filter cake at Area D) or onsite storage (sand and debris at Area C). Prior to the initiation of transportation and disposal (T&D) field activities, truck scales were installed at both Areas C and D. The scale at Area D was installed west of the Dewatering Building load-out area and the scale at Area C was installed west of the Desanding Building. Both truck scales were installed in August 2004 and calibrated by the City of New Bedford Department of Weights and Measures on September 1, 2004.

2.3.4 Dewatering Building Air Emissions Contingency Plan

In anticipation of further emission controls for nuisance dust, carbon monoxide, volatile organic compounds (VOCs), and PCBs, a technical memorandum was generated to address these potential exposure issues. In the event that direct-read monitoring indicated an exposure issue the following control measures were proposed:

- Controlling air movement around the filter presses with enclosures and, if required, installing a vent system and GAC filter for PCB/VOC treatment;
- Controlling air movement around the belt conveyors with enclosures and, if required installing a vent system and GAC filter for PCB/VOC treatment;
- Adding a dust suppression agent to the filter cake, thereby providing a dust suppressed filter cake for subsequent handling operations;
- Covering the filter cake staging pile during inactive periods (i.e., overnight or during weekend shutdown), allowing a limited exposed surface area prior to loading the cake for transport;
- Utilizing storage bins or hoppers to receive and move filter cake.

In addition the Dewatering Building Air Emissions Contingency Plan recommended, as a baseline standard procedure, that the facility exhaust fans be operated as appropriate to control air emissions within the facility and the surrounding area.

2.4 MODIFICATIONS 3, 4, AND 5

Modifications 3, 4, and 5 were primarily concerned with actual performance of remedial activities at the Site. With the exception of sample collection and analysis which is discussed separately in Section 3.0, these activities are discussed below based on the general task breakdown associated with Modification 3.

2.4.1 System Startup and Shakedown

During the final stages of system construction, an existing lined containment cell (Cell #2 at Area C) was filled with potable water from the City water system. This water supply was used to conduct the initial stage of system startup and shakedown activities. Water was pumped through the desanding units, submerged slurry pipeline, dewatering system, and wastewater filtration system, and then discharged into the Harbor. During this period, all electrical systems were tested, the pipelines and tanks were checked for leaks, and the system components were evaluated for operational safety, fluid balance, stability, and operating pressures.

The second and final stage of startup and shakedown activities involved the initial dredging from Area C Cell #1 to enable optimization of the dredging, desanding, dewatering, and wastewater treatment operations. The second stage startup and shakedown period lasted for 6 working days (from August 31, 2004 to September 8, 2004). Approximately 1,000 cubic yards of material were removed from Cell #1 during the shakedown period.

2.4.2 Dredge Contaminated Sediments from Area C Cell #1 and DMU-2

Following completion of the shakedown period on September 8, 2004, dredging operations continued in Cell #1 and were initiated in DMU-2. The dredging in Cell #1 was performed with an 8-inch hydraulic dredge and the DMU-2 dredging was performed using the larger 10-inch H&H and 12-inch Mudcat dredges.

2.4.2.1 <u>Dredging Siltation Control System</u>

Siltation controls were implemented within the dredge area as described in Subsection 3.3.5 of the *Execution Plan*. Silt curtains were placed around the perimeter of the dredge portion of the DMU-2. The section of DMU-2 that was not dredged this season includes an area extending along the entire eastern edge of the DMU and approximately 175 feet west of the line of sheet piles. This area is shown as brown or royal blue in Figure C-3 (Attachment C); indicating bathymetric depths within 0.5 feet of original grade.

The siltation control consisted of a floating boom with a weighted skirt around the perimeter of the dredge area. The underwater skirt length was 4 feet in deeper areas and 2 feet in shallow areas. The skirt was suspended off the bottom at high tide, but touched the sediments in shallower areas at low tide. The perimeter silt "curtain" was tied off to the sheet piles or secured at anchoring points.

Water turbidity monitoring around the DMU-2 was performed by ENSR International (ENSR) under separate contract to NAE. ENSR provided the project team with weekly updates on turbidity levels observed at their perimeter monitoring stations around the DMU. ENSR has reported to NAE that there were no exceedances of the +50 Nephelometric Turbidity Units (NTU) within the 300-foot mixing zone criterion throughout the duration of the dredging field work.

2.4.2.2 <u>Debris Removal Operations</u>

As described in the *Execution Plan*, the hydraulic dredge equipment is unable to remove large debris from the harbor floor. Consequently an excavator with a perforated bucket attachment was used for removal of sunken and buried debris prior to dredging. Starting in the northern area of DMU-2 on August 31, 2004, the excavator bucket was dragged through sediment, sifting out large debris. Materials removed included tires, cable, wood, rocks, and pieces of metal. Due to concerns over the vertical control of the method used and the increased turbidity levels caused by the removal operation, the debris removal activity was ceased after only four days, removing debris from a 50-foot by 225-foot area. The excavator remained staged at the DMU-2 after this to assist in removing debris encountered during dredging operations. The total amount of debris removed during the field season was approximately 5 cubic yards. The debris was stockpiled for winter storage on a liner within the Area C Debris Disposal Area (DDA).

2.4.2.3 Engineering Controls for Hydrogen Sulfide

Background

Dredging operations in DMU-2 commenced on September 8, 2004. Within approximately half an hour of pumping dredge material to the Desanding Building, significant hydrogen sulfide (H_2S) odors accumulated inside that building. The building was immediately evacuated and dredging was stopped. Air monitoring in the Desanding Building was performed using a portable MultiRAE analyzer. The highest H_2S concentrations were measured near the shaker screens at 400 ppm. Other locations in the building indicated wide variation in levels from less than 1 ppm to as high as 185 ppm. A plot of H_2S concentrations recorded on MultiRAE analyzer for the incident is shown in Attachment D-1, "Hydrogen Sulfide Control from Desanding Operations at New Bedford Harbor Superfund Site". Additional details associated with air monitoring in the Desanding Building are presented in Subsection 2.4.3.1.

H_2S is present in marine sediment due to normal anaerobic [no oxygen present] degradation of organic material. Sea water and brackish estuary water contain essentially limitless amounts of sulfate ion [most likely sodium sulfate: Na_2SO_4] that is available for reduction to sulfide ion [$S^{=}$] by anaerobic bacteria respiratory processes. Once the bacteria produce $S^{=}$ at the sediment pH of 7, $S^{=}$ instantly combines with a hydrogen ion [H^+] present to form the highly soluble bisulfide ion [HS^-]. At this neutral sediment pH, 50 percent of the HS^- will remain as HS^- and 50 percent will go on to form both gaseous H_2S and dissolved H_2S, according to the equilibrium equation:

$$S^{=} + 2H^+ \leftrightarrow HS^- + H^+ \leftrightarrow H_2S\text{ (aqueous)} \leftrightarrow H_2S\text{ (gas)}$$

This equilibrium is highly pH dependent. If the pH is shifted to 5.0, 99 percent of sulfides will exist as H_2S (both gaseous and aqueous). If the pH is shifted to 8.5, 99 percent of the sulfides will exist as aqueous HS^-.

H_2S Control Alternatives Evaluation

Beginning on September 8, 2004, the following conventional hydrogen sulfide control alternatives were identified and technically evaluated, as presented in Attachment D-1:

1. Oxidation of sulfide to sulfate using chemical oxidants;
2. Shift slurry pH from 7 to 8.5, which shifts sulfide equilibrium to 99 percent HS^-;
3. Addition of ferric sulfate, $Fe_2(SO_4)_3$, to eliminate H_2S by precipitating ferric sulfide (FeS) in conjunction with the production of sulfuric acid (H_2SO_4):

   $$Fe_2(SO_4)_3 + 3H_2S \rightarrow 2FeS\downarrow + S^{=} + 3H_2SO_4;$$

4. An air-release system at the entrance to the Desanding Building prior to the shaker screens to vent gaseous H_2S to an enclosed air treatment system; and
5. A targeted air handling system over the shaker screens, hydrocyclones, and v-bottom tank to provide additional removal of gases liberated in that area.

Alternatives #3 and #5 were selected for application at the Site. Bench-scale testing of Alternative #3 was conducted to establish the ferric sulfate dosage to be implemented.

Bench Tests for Ferric Sulfate Dosage

On September 10 and 11, 2004, bench tests were conducted to determine the dosage of ferric sulfate required to control H_2S. The tests showed that the dosage required to react with the amount of reactive sulfide present was 0.5 gallons concentrated ferric sulfate solution (66 percent by weight $Fe_2(SO_4)_3$) per 800 gallons of slurry. A 7.5 percent solids slurry was used for this test. That dosage translates to 1.33 gallon of ferric sulfate solution per 1,600 gallons for a 10 percent slurry ([refer to Attachment D-2, “Hydrogen Sulfide Control Bench Test Data Sheets” and Attachment D-3, “H_2S Process Engineering Monitoring Plan”).

Ferric Sulfate Injection System Description

On September 13, 2004 test results and path forward were presented as shown in Attachment D-4, "Hydrogen Sulfide Testing Summary and Proposed Plan". Based on the bench tests, the following ferric sulfate solution injection system was designed and constructed at the Aerovox site:

- one 6,500-gallon, HDPE tank, for storage of 66 percent ferric sulfate solution; and
- three 1 gpm to 3 gpm manual metering pumps and valves.

Ferric addition was made by manually starting/stopping the metering pump(s) as-needed and by manually setting metering pump ferric dosage flow to match the slurry flow. The operator received the slurry flow by radio and set the ferric flow per an established dosage chart. The dredging pipelines were also modified to pass through the injection system, which was staged in the Aerovox parking lot.

The new piping arrangement added 400 feet and one elbow to the DMU-2 dredge pipelines, the equivalent of an additional 3.4 pounds/square inch gauge (psig) head loss at the maximum flow of 2,000 gpm.

Ferric Sulfate Injection System Results

Two aspects of the dredging operation had the potential to complicate the practical implementation of the ferric sulfate injection system. Not only was the dredge slurry flow variable, ranging from 500 gpm to 2,000 gpm, but also the percent solids content of the slurry was variable, ranging from 1 percent to 20 percent dry solids. This dual variability could have made obtaining the correct ferric sulfate dosage very difficult to maintain, but apparently was not a problem, based on performance. If ferric sulfate continues to be used to control H_2S, adding a mass flowmeter to pace each ferric sulfate metering pump would improve reliability of the system. In addition it is possible that some H_2S variability is associated with the relative depth of dredging (i.e. first pass dredging vs. subsequent deeper cuts).

In spite of the variability noted above, the ferric injection system was highly effective at controlling H_2S concentration in the Desanding Building during the entire period of DMU-2 dredging operations. The H_2S concentration in the Desanding Building and near the shakers was typically between one to two ppm in air during this time, with occasional short-term spikes of 40 to 70 ppm that had durations in several seconds. Desanding Building personnel operated in Level B, with supplied-air, respiratory protection until the last few days of operation.

Slurry headspace samples were collected from the slurry pipelines upstream of ferric sulfate injection and at the Manomet Booster Pump Station and analyzed for H_2S. The results are presented in Table 2-1.

Table 2-1 H_2S Headspace Concentrations

Date	H_2S Headspace Concentration (ppm) at Aerovox, Upstream of Ferric Injection	H_2S Headspace Concentration (ppm) at Manomet Booster Pump Station
10-25-04	87	0
10-26-04	18	0
11-3-04	44	0
11-4-04	87	0
11-10-04	48	0

The five data points on Table 2-1 seem to indicate that the nine minutes of flow time (3,400 feet at 1,500 gpm) from Aerovox to Manomet Street, and flow turbulence, are sufficient for a complete reaction of ferric sulfate with H_2S.

On three occasions, longer duration H_2S spikes occurred that were over 100 ppm at the Desanding Building near the shakers. These were caused by malfunctions at the ferric addition station as follows:

- October 6, 2004: metering pump check valve plugged by wood debris from the ferric supply tank;

- October 15, 2004: metering pump pressure temporarily reduced [root cause not identified]; and
- October 21, 2004: operator error, injecting ferric into an inactive dredge pipeline.

During the 2004 dredging season, the overall average ferric sulfate dosage was 13 percent lower than dosage recommended by bench-scale tests (refer to Attachment E). This did not appear to cause high and sustained H_2S concentrations at the Desanding Building.

Although successfully controlling the release of H_2S in the Desanding Building, Sevenson stated that ferric sulfate addition had an adverse effect on the dewatering operation. According to Sevenson, the ferric sulfate caused a decreased rate of filter cake production which, in turn, slowed the overall sediment dewatering process. The mechanics and chemistry of this adverse effect will be evaluated if ferric sulfate is proposed for use again in 2005.

Sulfide Compound Concentrations in Slurry

Analyses were also done on the 30 percent solids sediment samples for *reactive sulfides* [H_2S] by using Method §7.3.4.2 and for total sulfides using EPA Method 9030B; these analyses were performed by Waste Stream Technologies. The concentration of reactive sulfides in five, 30 percent solids sediment samples, collected from DMU-2 on September 15, 2004, were in the range of 168 ppm to 305 ppm. The concentration of *total sulfides* in the same samples ranged from 176 ppm to 353 ppm.

Based on the ferric sulfate dosage required to combine with H_2S during bench scale testing, it was estimated that the *theoretical stoichiometric concentration* of H_2S in a 30 percent solids slurry of DMU-2 sediments at natural pH, was approximately 200 ppm.

A 30 percent solids sediment sample was collected from DMU-2 on September 10, 2004 and analyzed for *acid-soluble sulfides* by Severn-Trent Laboratory to be 3,020 ppm.

The reactive sulfides and total sulfides tests are in reasonable agreement. But because the acid-soluble sulfides are an order of magnitude higher, further review of the exact sulfide compounds and concentrations this method quantifies is required to provide an explanation of this result.

Additional Controls

Although the ferric injection system was effective in reducing the levels of H_2S in the Desanding Building, there were still intermittent spikes. Workers in that building continued to wear Level B Personal Protective Equipment (PPE) as a back-up safety precaution to ferric sulfate injection. In an effort to eliminate the need for Level B PPE, additional engineering controls were investigated and implemented in the Desanding Building, including redesign of the existing air handling system and construction of local exhaust hoods over the coarse shakers. Desanding Building activities and components associated with hydrogen sulfide control are presented in Subsection 2.4.3.

2.4.2.4 Cell #1 Dredging Production

The progress of dredging within Area C Cell #1 was inhibited by rocks, bricks, and other materials encountered in the cell. Although the material within the cell consisted mostly of fine to medium sand and silts, larger rocks and other debris (bricks, rope, pipe) were present that could not move effectively through the dredge pump and flexible coupling/hard pipe system set up between the dredge and the desanding units. The larger debris, out of sight to the dredge operator, caused excessive downtime to clear from the cutterhead and pipeline.

Despite the slow progress, dredging continued in the Cell #1 until 22 September 2004 when the ferric sulfate injection system was operational at Aerovox. At that time, Jacobs received direction from NAE to cease dredging operations in Cell #1 and dredge exclusively in DMU-2. The dredging in Cell #1 produced 32 tons of over 2-inch material (5 percent), 250 tons of sand (38 percent), and 376 tons of filter cake (57 percent); it is estimated that a total of 1,563 cubic yards of material was removed from the cell.

2.4.2.5 DMU-2 Dredging Production

The DMU-2 dredging was initiated on September 8, 2004, but as discussed in Subsection 2.4.2.3, the dredge was temporarily shut down due to excessive H_2S safety concerns and the installation of the ferric sulfate injection system. Dredging started again on September 23, 2004 and continued until November 10, 2004.

The pre-established target dredge depth was the theoretical depth below mudline to remove sediment above the clean-up action levels. This depth, referred to as "Z*", was derived using a comprehensive data set, geostatistical analyses, and modeling methods that predict compliance depths between analytical sampling locations. The *Draft Data Interpretation Report*, prepared by FW in June, 2002 describes the methods used to develop the Z* compliance depths.

Using the Z* values as the basis for determining dredge depth, a dredge plan map was prepared for DMU-2 (see Figure C-1). An alpha-numeric grid system was developed to divide the DMU-2 dredge area into 25-foot x 25-foot blocks. The average maximum Z* depth within each block was identified as the target dredge depth for that 25-foot by 25-foot area. This dredge map was provided to NAE for review prior to use in the field.

The dredge was configured to move in a west to east orientation within the DMU. Initially, the dredge moved through each 25-foot block with an even cut depth down to approximately 2 feet, the minimum Z* elevation. Deeper cuts were made in the 25-foot grid blocks where the Z* depth was deeper.

The maximum efficiency cut depth for the dredge was 1 foot. To achieve the greatest mass removal throughout the DMU, given the limited dredge time and funding available, the dredge was moved frequently along the north south aligned guidance tie-back cable. These frequent moves allowed the dredge operator to maintain deeper cuts (above Z*) rather than spending more time in one area achieving the Z* depth. The dredge map included as Figure C-2 represents the area covered during the first 4 weeks of dredging when the dredge was moved frequently. In some areas within DMU-2, namely across grid lines 2 and 4 on Figure C-2, dredging progress was extremely slow due to a high incidence of shell and rock debris. The dredge pump and pipeline quickly became fouled with this debris, requiring an appreciable amount of downtime to clear. In the interest of time, dredging in this area was avoided.

Because of the size of the DMU-2 dredge area and the limited funding available this field season, only a portion of the DMU could be dredged to the Z* elevation. An objective established by the EPA and NAE during weekly team meetings was to identify an area where dredging to the Z* elevation would be accomplished. Confirmation sampling (by ENSR) would be completed in this area after dredging to evaluate the accuracy of the Z* dredge depth at meeting the clean-up criteria (10 ppm PCBs). To meet this objective, during the final phase of dredging (November 1 through November 10, 2004), the dredging operations concentrated on a 100-foot by 250-foot area of DMU-2 between numeric grid lines 12 and 15 and alphabetic grid lines B and J (see Figure C-3). During an inspection with NAE of the dredging operations at the Z* depth on November 1, 2004, an appreciable amount of floating oils and gas bubbles were observed at the cutterhead.

The floating oil observed at the dredge cutterhead prompted the project team (NAE, EPA, and the Jacobs team) to change the approach for the final dredge pass from terminating at the Z* elevation to dredging deeper, below Z*. Sediment core samples provided by ENSR were taken from the final dredge pass area prior to final dredging. The physical characteristics of these samples indicated a change in the color and sediment type at elevations deeper than projected by the Z* model. In light of this finding, and additional information provided by NAE Project Engineers related to other New Bedford Harbor dredging projects, it was suggested that this color change may be coincident with the vertical extent of PCB contaminated sediments. To verify this correlation, a revised dredge plan was adopted for the remaining days of dredging, i.e. 2 November through 10 November 2004. The modified dredge plan included deepening the depth until the presence of floating oils and gas bubbles was not apparent, even if the depth was below Z*. Planned confirmation sampling by ENSR would evaluate the sediment PCB concentrations at all areas dredged. Data from this sampling will be used to evaluate the accuracy of the Z* estimates in this" DMU. The analytical results of these sampling events are beyond the scope of this document.

A map of the area dredged in DMU-2 this field season, showing the boundaries of adjacent DMUs, is included as Figure C-4. The final dredge cut depths are shown in greater detail on Figure C-5 as contours and Figure C-6 as a 3-dimensional view. The depths of the dredge cut in relation to the established Z* depth are shown as contours on Figure C-7 and as a 3-dimensional view on Figure C-8. As shown on these figures, the dredge cut depth went below the Z* depth between numeric grid lines 13 and 14 over a 225-foot area west to east between alphabet grid lines B and J. The observed floating oil and gas bubbles at the dredge head were appreciably diminished at dredge depths between 2 to 3 feet below Z*.

Dredging was terminated on November 10, 2004 and the dredge equipment was removed from the DMU; although the dredge operated in DMU-2 on November 10, 2004, dredging encountered excessive debris that prevented production on this final day, and thus this date is not reflected on Figure C-3. Immediately following dredging, a final bathymetric survey was conducted over the entire dredge area by the Jacobs team's third party surveyor, Meridian Associates. The dredge depths utilized to create Figure C-4, Figure C-5, Figure C-6, Figure C-7, and Figure C-8 are based on this final survey data.

2.4.2.6 DMU-2 Survey Activities

Various bathymetric surveys were performed by Meridian Associates for utilization by the Jacobs team.

A pre-dredge survey was completed by Meridian Associates to develop a representation of the starting topography of the dredge area. Using this survey, the Jacobs team developed a dredge plan (Figure C-1). This plan was used by the Jacobs team's dredge operator, survey staff, and Quality Control Manager to monitor dredging progress.

A survey completed on October 28, 2004 was used to develop north-south cross sectional views through DMU-2. Figure C-9 indicates the location of the cross section lines within the DMU and Figure C-10 depicts five cross sections with the target Z* elevation line in red and the dredge depth line (as of October 28, 2004) in green. These graphics show that the dredge depth within sheet pile pairs 28-13 and 26-15, the area selected for confirmation sampling after dredging (by ENSR), had reached the targeted Z* elevation.

As described in Subsection 2.4.2.5 above, dredging within DMU-2 continued below the Z* elevation after November 2, 2004 when it became apparent that floating oils, and therefore sediments potentially contaminated with PCBs, were still present at the Z* depth. A final dredge survey was completed by Meridian Associates on November 12, 2004, after the conclusion of dredging. All the dredge depths indicated in Figure C-4, Figure C-5, Figure C-6, Figure C-7, and Figure C-8, and Figure C-11 are based on the November 12, 2004 Meridian Associates survey data.

Cross sectional views of the final dredge area surveyed two days after dredging concluded on November 10, 2004 are included as Figure C-11. This figure clearly shows the areas dredged below Z* and the areas where the target Z* depth was not attained.

2.4.3 Coarse and Fine Material Separation at Area C

The Desanding Building, including installed equipment, was constructed at Area C to perform separation of coarse and fine materials (e.g. shells, sand, etc.) from the dredge slurry. Due to issues associated with elevated concentrations of hydrogen sulfide in DMU-2 sediments, several unanticipated activities associated with air monitoring and emissions control were also performed at Area C during production operations. These air emissions and material separation activities performed at Area C in 2004 are described In Subsection 2.4.2.3 and in Subsections 2.4.3.1 through 2.4.3.4 below.

2.4.3.1 <u>Additional Monitoring Due to Hydrogen Sulfide</u>

September 8, 2004 marked the demarcation between system startup/shakedown activities and intended normal production activities. Consequently, on September 8, 2004, dredging operations began in DMU-2. Personnel within the Desanding Building were wearing Modified Level D PPE that consisted of Tyvek coveralls, chemical protective boots, gloves, hard hats, safety glasses, and hearing protection. Within approximately a half an hour of receiving slurry from the dredge, workers noticed an odor and contacted Sevenson's Health and Safety Officer. Direct reading instruments identified elevated levels of H_2S present inside the Desanding Building. Levels spiked at approximately 400 ppm H_2S, and data logged results (60 second intervals) identified peak levels at around 180 ppm. Workers suspended dredging and desanding operations and evacuated the facility.

Due to the elevated levels of H_2S detected, a pretreatment process using ferric sulfate was developed and installed over the course of the following week (September 13 through September 22, 2004) to minimize H_2S levels in the slurry.

Increased air monitoring was used to better identify H_2S and hydrogen cyanide (HCN) levels inside the Desanding Building and to warn personnel prior to levels climbing to concentrations that would pose a health risk. Additional action levels were established for suspending activities. Specific action level concentrations were based on the level of PPE being worn by personnel inside the facility.

After H_2S was initially identified, it was determined that a more extensive and reliable system was necessary to continuously monitor and warn personnel in the event contaminant levels exceeded established action levels. An AreaRAE with a radio transmitter was obtained to monitor the shaker area. The instrument would transmit data back to a laptop where it would be continuously monitored throughout the workday.

HCN monitoring was also implemented due to concern of potential HCN generation. The addition of ferric sulfate, a strong acid, might in turn cause a severe enough pH drop to produce HCN. The AreaRAE and MultiRAE instruments were both equipped with electrochemical HCN sensors. Personnel entering the desanding facility were also required to wear personal H_2S sensors equipped with alarms set for established action levels. Protocols were established for air monitoring to include H_2S and HCN monitoring and associated action levels for these contaminants. Selected air monitoring details, including monitoring locations, associated instruments, and actions levels are summarized in Table 2-2.

Table 2-2 Air Monitoring Protocol

Instrument	Location	Mode of Operation	Action Level	Action
MultiRAE H_2S	Ground level entrance and operating pump tank	Continuous	40 ppm	***Evacuate at 50 ppm*** after 10 minutes sustained
MultiRAE HCN	Ground level entrance and operating pump tank	Continuous	1 ppm	***Evacuate at 2 ppm***
MiniRAE (PID)[1] (H_2S)	Operating pump	Continuous	100 ppm	Detection up to 4000 ppm
AreaRAE (VOC)	Shaker Platform	Continuous	50 ppm	Use PCE[2]/TCE[3] colorimetric tubes. Collect integrated samples if detected above 50 ppm or no detection made.
AreaRAE (HCN)	Shaker Platform	Continuous	1 ppm	Evacuate at 2 ppm
Integrated sampling (VOC)	Pump Tank	1 day/week	50 ppm	Evaluate results

Notes:
1. PID – photoionization detector
2. PCE – perchloroethylene
3. TCE – trichloroethylene

Dredging operations resumed on September 22, 2004, with workers in the Desanding Building wearing Level B PPE. Level B consisted of full-face airline respirators operating in pressure demand mode, Tyvek coveralls, chemical protective boots, gloves, hard hats, and hearing protection. Within 8 minutes of receiving ferric sulfate pretreated slurry, direct reading instruments detected levels of HCN in excess of the action levels established for routine operations. Workers immediately suspended operations and evacuated the desanding building.

After review of the existing controls, it was determined that workers would require increased skin protection until it could be determined if the HCN levels were accurate or a result of cross sensitivities of the electrochemical HCN sensor with the H_2S present in the facility.

On September 23, 2004, dredging operations restarted with workers wearing Level B PPE. Level B consisted of full-face airline respirators operating in pressure demand mode, Tyvek inner suit, hooded Tychem SL outer suit (Saranex), chemical protective boots, gloves, hard hats, and hearing protection. Personal H_2S sensors were utilized with 3-way alarm (audio, visual, vibratory) on all personnel working inside the Desanding Building. Once it was determined with colorimetric tubes that there was no HCN present inside the Desanding Building, workers downgraded their protective suits by removing the Saranex outer suit.

Integrated area samples were collected for H_2S and HCN using National Institute of Occupational Safety and Health (NIOSH) Methods 6013 and 6010, respectively as a final means to show sources of H_2S within the desanding operation, and more importantly to definitively document that HCN was not present. An AreaRAE, MultiRAE, and Dräger colorimetric tubes were used for real time air monitoring of H_2S and HCN.

Area samples were collected at the shaker, V-bottom tank headspace, and hydrocyclone. During sample collection, direct reading instruments and Dräger tubes were used to collect background information. All HCN detector tubes indicated there was no HCN present during area sample collection. All integrated area samples analyzed for HCN indicated there was no appreciable concentration present during the two full days of integrated sampling. The results of the air monitoring are presented in Table 2-3

Table 2-3 Air Monitoring Results Summary

Date	Time/Method	Peak Duration	H_2S	HCN
9/8/04	~1740/Direct read	10 minutes	180 ppm peak	N/A
9/22/04	~1015/Direct read	Instantaneous	N/A	8 ppm
9/23/04	Full shift/Colorimetric tubes	N/A	N/A	0 ppm
9/23/04	Full shift/Integrated sampling	N/A	<0.24 ppm	0.015 ppm
9/24/04	Full shift/Colorimetric tubes	N/A	N/A	0 ppm
9/24/04	Full shift/Integrated sampling	N/A	<0.24 ppm	0.012 ppm
9/24/04	~1215/Direct read	10 minutes	36 ppm	163 ppm

2.4.3.2 Necessity for Supplied Breathing Air

The rate of hydrogen sulfide generation cannot be adequately quantified due to the numerous variables associated with the environment of New Bedford Harbor, unlike typical chemical production with a relatively constant output rate. The best management practices (hierarchy) for controlling worker exposures are through engineering controls, administrative controls, and finally through personal protective equipment.

Exposure limits for hydrogen sulfide (assuming no supplied air) are presented in the following table (Table 2-4) to outline background information on why supplied breathing air was necessary for the continuation of work.

Table 2-4 Hydrogen Sulfide Exposure Limits

H_2S Exposure Limits	OSHA[1]	ACGIH[2]	NIOSH
Ceiling	20 ppm (10 minutes)	--	10 ppm (10 minutes)
Peak	50 ppm	--	--
STEL[3]	--	15 ppm	--
8-hour TWA[4]	10 ppm	5 ppm	--
IDLH[5]	100 ppm	--	100 ppm

Notes:
1 Occupational Safety and Health Administration
2 American Conference of Governmental Industrial Hygienists
3 Short Term Exposure Limit
4 Time Weighted Average
5 IDLH – Immediately Dangerous to Life or Health

The H_2S physical characteristics associated with the above limits assume a vapor pressure of 17.6 atmospheres (i.e. an extremely volatile gas), a vapor density of 1.189 at 15^{o}C (i.e. slightly heavier than air), and a molecular weight of 34.1. Other important characteristics of hydrogen sulfide gas are that it has an upper explosive limit of 44 percent and a lower explosive limit of 4 percent. Additionally, this chemical causes the olfactory nerves to fatigue rapidly, and therefore an individual does not receive reliable physical indications warning that an air-purifying respirator is malfunctioning or has achieved break-through; as such, an air-purifying respirator is an inappropriate form of respiratory protection.

The first engineering control to address the hydrogen sulfide problem was by chemical injection as described previously. However, due to the variability of the hydrogen sulfide concentrations, and/or chemical injection process failure, this control alone was deemed insufficient for adequate protection of the workers or the public.

The second engineering control was the use of local exhaust ventilation at the point of release near the coarse screen shaker. Even with maximum efficiency of the ferric sulfate injection, the unbound hydrogen sulfide portion could still be released at the coarse screens into the enclosed work environment potentially creating a dangerous atmosphere.

This is why the ventilation system was deemed necessary. However, further data and engineering design was necessary to provide an adequate ventilation system in order to reduce volatile emissions below exposure limits within the Desanding Building. During the interim, the ferric sulfate injection system, supplied air, and increased air surveillance were utilized until the local exhaust system was designed, installed, and proven.

Finally, the use of respiratory protection, in this case supplied air, was the last option employed in controlling worker exposures. IDLH conditions had been exhibited in the previously mentioned event.

Again, as a matter of best management practices and traditional industrial hygiene management, working in an IDLH atmosphere is not prudent nor an industry accepted practice. The practice of using half an exposure value is expected to maintain manageable working conditions. In this case, respiratory protection would be worn up to 50 ppm. The principal reasons for this approach are to limit potential exposures to IDLH conditions and to address the uncertainty associated with monitoring instrumentation that, over a wide range of ambient concentrations, is not accurate at all points. In addition, using 50 percent of the IDLH allows for timely shut down and evacuation of the facility prior to levels reaching IDLH concentrations.

2.4.3.3 Modifications to GAC System

The Desanding Building was enclosed in a large sprung structure during mobilization for the purpose of odor containment. An exhaust system consisting of a 20,000 cfm blower, grills, and ducting, and a 20,000-pound granulated activated carbon (GAC) system was installed outside the north end of the structure for odor control. The as-installed GAC system was operated with two separate 10,000-pound beds in series. The ventilation system was sized, designed, and supplied by Tigg Engineering, a subcontractor to Sevenson.

The existing GAC system was determined adequate in size to accommodate an additional local exhaust system. The as-installed carbon system was re-configured to allow the

10,000 cfm general exhaust flow from the Desanding Building to flow through one bed and the two 6,000 cfm coarse shaker hood exhausts to flow through the other bed. The reason for this selection was to expedite the operation so that worker protection could be facilitated most readily and without incurring additional cost.

2.4.3.4 Addition of Shaker Screen Hoods

Due to the inconsistency of the air monitoring results and the frequency of the peaks exceeding action levels for work in modified Level D, local exhaust ventilation was recognized as a necessity to eliminate the need for routine use of respiratory protection.

The Desanding Building houses two coarse shakers. The local exhaust ventilation control implemented consisted of providing a separate canopy hood and blower for each shaker. The exhaust lines from each blower were tied in to a common header and then discharged into the dedicated GAC bed described in the previous Subsection. Details of the design, construction, and operation of the shaker screen hoods are presented below.

The Jacobs team selected 150 feet per minute (fpm) as the capture velocity needed for the coarse screen shaker hood. Operational needs such as clear access to the rock box, viewing the influent flow, shaker configuration, and the need for shaker maintenance constrained the ability to install a fixed rigid local exhaust ventilation system. For each shaker, a square tube stock frame corresponding to the dimensions of the shaker was fabricated and installed. Next, a 20-inch round polyvinyl chloride (PVC) flange was mounted on the framework for the exhaust branch takeoff to which a 20-inch round corrugated flexible plastic duct was attached. The duct was run to the suction side of a 6,000 cfm blower. The discharge lines from the separate 6,000 cfm blowers associated with each shaker were combined into a common header that in turn was connected to the GAC prior to exhausting the air to the atmosphere. With the units connected in this way, both blowers needed to be operated at the same time so that recirculation of exhaust vapors would not occur. In order to capture the H_2S emissions and direct them to the just-described exhaust system, a large PVC tarp was draped and screwed down to the tubular framework over each shaker to act as a canopy-type hood with side curtains.

Using operational parameters of 1,200 to 1,500 gpm slurry flow and ½-inch coarse screen as a design basis, the hood for each shaker was sized to extend out approximately three feet over the entire 12 foot width of the shaker, at these flow rates over the ½-inch screen, the slurry cascaded out of the rock box no more than 18 inches with sea shells being the only material remaining on the screen.

A baseline ventilation survey of the shaker hoods was conducted on October 16, 2004 and October 19, 2004. A calibrated TSI VelociCalc hot wire anemometer was used for the survey. With both hoods and the general exhaust system on and all of the building doors closed, each hood averaged between 185 to 190 fpm capture and face velocity without the desanding unit in operation.

After the hood was designed and installed, subsequent H_2S monitoring showed that the shorter hood design did not capture all H_2S. It is believed that there are several reasons for this outcome. Of principal importance, the operational parameters associated with coarse screening changed. Slurry flows increased to 1,800 to 2,000 gpm as a result of improved sediment characteristics that allowed for increased slurry flow. Also, the screen size was changed to ¼-inch openings since the sediment contained greater amounts of fibrous organic debris. Consequently, the smaller screen kept more organic material on the screen for the entire length of the screen. These changes resulted in an increase in the distance of the slurry cascade to approximately 36 inches beyond the rock box, right at the face of the hood, whereas when the original H_2S monitoring data was conducted, the majority of material dropped through the screen within the first 18 inches. This condition was exacerbated since the nature of the rejected debris changed from primarily shells, which carry minimal H_2S, to primarily wood debris, which carries more H_2S. In addition to these operational factors, there were also two factors associated with hood construction that may have contributed to adverse impacts on H_2S capture; first, the hood material was not fastened as completely as possible to the shaker body, thus allowing some air leaks, and second, the hood surface was not smooth which caused turbulence, slowing air flow and decreasing capture velocities.

Subsequently, the tarp was extended to nearly the full length of the shaker screen in an attempt to control emissions, but without complete success. Although the frequency of elevated spikes of hydrogen sulfide decreased somewhat, they were still of sufficient concentration to prevent a downgrade from supplied air.

While the ferric sulfate injection and ventilation systems were in place, VOC concentrations were extensively monitored with direct-read instrumentation. Datalogged information was reviewed daily for any trends that might be evident. H_2S monitoring data was collected from September 23, 2004 to November 3, 2004 and near the end of the dredge season, enough data had been collected to conclusively show that the time-weighted-average H_2S concentration was within an acceptable range and that downgrading would be possible. The Jacobs Site Safety and Health Officer made several calculations demonstrating that possibility based on the previous monitoring results. This information was presented to the team for consideration. With only three days of dredging operations remaining, downgrading was attempted. However, at the onset of dredging, personal hydrogen sulfide monitors alarmed almost immediately. Operations were suspended momentarily and the crew moved away from the shakers to a predetermined location. The night before, dredge lines were changed due to a line blockage. The ferric sulfate injection pump was turned on at the proper rate, but injected into the plugged line. Once the system was started on the active line, H_2S readings in the Desanding Building returned to zero. The desanding personnel opted to wear supplied air the remainder of the morning. Once it was demonstrated to the workers that no measurable VOC concentrations were being detected, the crew downgraded to modified level D with emergency air escape packs and personal monitors in place. The following day of dredging was also completed in the downgraded level of protection.

2.4.3.5 <u>Quantities Generated</u>

The following two solids waste streams were generated at the Area C Desanding Building:

1. Coarse Screenings: Miscellaneous material, such as clam shells, other marine shells, wood, golf ball cores, and rocks, that did not pass though the coarse screen shakers. The coarse screen size was decreased during the 2004 dredge season from ½-inch to ¼-inch square openings.
2. Fine Screenings: Sand and sediment that did not pass though the 200-mesh screens.

During Cell #1 dredging (September 1, 2004 through September 22, 2004), 32 tons of coarse screenings and 250 tons of fine screenings (sand) were generated by Area C separation processes (refer to Attachment E and Attachment F tables). All screened materials generated during this period were transferred to dedicated stockpiles (one for coarse screenings and one for fine screenings) at the Area C DDA where the materials continue to be stored under tarps. The 250 tons of sand was tested and determined to be Non-TSCA waste (refer to Subsection 3.3); the 32 tons of coarse screenings must be characterized in 2005 prior to off-site disposal. The small, southernmost pile at the DDA contains the coarse screenings from Cell #1, while the adjacent moderate-sized stockpile contains fine screenings from Cell #1.

During DMU-2 dredging (September 23 to November 10, 2004) 326 tons of coarse screenings and 1,329 tons of sand were generated by Area C separation processes (refer to Attachment E and Attachment F tables). As with the screenings derived from Area C Cell #1, all DMU-2 coarse screenings and sand generated were transferred to the DDA where the material is currently stored under tarps. All debris and sand is considered a TSCA waste (refer to Subsection 3.3 for further detail on Area C waste testing). The northernmost stockpile at the DDA contains the DMU-2 - related coarse screenings, while the large stockpile to its immediate south contains DMU-2 - related fine screenings.

2.4.4 Sediment Dewatering at Area D

The sediment dewatering system installed in the Area D Dewatering Building during 2004 consisted primarily of eight 20,000-gallon filter press feed tanks (agitated fractionation (frac) tanks), a 10 horsepower (hp) induced draft centrifugal fan and carbon filter for feed tank exhaust, eight filter press feed pumps (two typically in standby mode), eight polymer addition units, six 8.1 cubic yard, plate and frame filter presses with drag conveyors, a horizontal belt conveyor, and an inclined belt conveyor. Operation of the sediment dewatering system during the 2004 production season is described below.

2.4.4.1 Production Variables (Polymers, Cycle Times, etc.)

The rate of dewatering in a plate and frame filter press is dependent on several process variables as follow, in order of importance:

1. press feed percent dry solids;
2. physical characteristics of sediment (% greater and less than 200 mesh sieve);
3. extent of press feed solids agglomeration (polymer performance);
4. press feed flow rate;
5. press feed pressure;
6. dewatering cycle time; and
7. press feed configuration.

The first two process variables are of prime importance.

A review of production data from Sevenson as presented in Attachment F shows that dewatering Area C Cell #1 sediment was not very successful, largely due to the difficulties associated with larger particle size sediments than originally anticipated. The slurry of sediments from Cell #1 was very dilute, in the range of 1 percent to 4 percent dry solids. The resulting filter press cycle times were between 700 to 4,000 minutes, yielding between 0 to 6 drops/day. The heavy particle size, combined with the accordion-style flexible pipeline joint couplings on the dredge discharge pipeline, caused hydraulic dredging to be ineffective. The sediment fed from Cell #1 was very dilute, in the range of one percent to four percent dry solids, which resulted in cycle times of 700 to 4,000 minutes and 0 to 6 drops/day.

The DMU-2 sediment dewatering process achieved >20 press drops/day once feed percent dry solids were brought up around 4.5 percent and the required cake percent dry solids was allowed to be lowered to <65 percent. The feed solids concentration was calculated by Jacobs based on multiplying Sevenson's average percent solids feed of 7.6 percent (for 15 days of >20 drops/day) by the ratio of Jacobs' overall actual average feed solids (3.8 percent) to Sevenson's overall feed solids (6.4 percent). That ratio is 0.594 (refer to Attachment E and Attachment F).

Attachment F data shows that of the 34 DMU-2 operating days, 15 days were >20 drops/day. On those days the operating averages were as follows:

- Jacobs average press feed percent dry solids = 4.5 percent;
- Sevenson average press feed percent dry solids = 7.6 percent;
- Average filter cake percent dry solids = 61.8 percent;
- Average number of drops/day = 27; and
- Average press cycle time = 163 minutes.

Attachment F data also shows that for the other 19 DMU-2 operating days, when there were <20 drops/day, the operating averages were as follows:

- Jacobs average press feed percent dry solids = 3.2 percent;
- Sevenson average press feed percent dry solids = 5.4 percent;
- Average filter cake percent dry solids = 62.9 percent;
- Average number of drops/day = 14; and
- Average press cycle time = 353 minutes.

As shown by the data, increasing feed solids content and decreasing required filter cake percent solids resulted in increased filter cake production.

Sevenson conducted numerous tests to optimize polymer dosing, including use of other polymers. During the 2004 dredging season a total of 124 bulk containers (totes) of polymer were purchased for the dewatering process. Each tote contained 2,500 pounds polyamine cationic polymer 4275, supplied by Dixie Environmental (Baton Rouge, LA). Of those, 57 totes were used in dewatering and 67 totes remain. That equates to an overall season average dosing rate of 33 lbs polymer solution/dry ton of sediment feed.

As polyamine polymer has a long shelf life, this polymer overstocking should be advantageous for the 2005 season if the price of polymer continues its trend upward.

Further evaluation and possibly testing should be done to determine the following:

- the extent to which higher press feed solids (say 10 to 15 percent) will increase filter cake production; and
- the extent to which a different polymer or polymers will increase filter cake production.

2.4.4.2 Quantities Generated

During the period from September 2, 2004 through November 11, 2004 there were a total of 716 press drops, at an estimated 8.1 cubic yards (cy) per drop. As a design basis, Sevenson estimated the cake density at 1.34 tons/cubic yard which calculates to a production of 7,771 wet tons. The actual total 2004 filter cake generated, weighed, and shipped for off-site disposal in Michigan was 7,062 wet tons, as shown on Attachment F. That 10 percent difference is likely due to some combination of the drops being slightly less than 8.1 cy/drop, the variability of the in-situ sediment densities, and the actual average filter cake percent dry solids being less than the 66.15 percent used in design basis calculations.

All filter cake was determined to be a TSCA waste (refer to Subsection 3.4 for further detail on Area D filter cake testing).

2.4.5 Wastewater Treatment at Area D Dewatering Facility

2.4.5.1 Treatment Process Overview

The Area D Wastewater Treatment Plant (WWTP) consists of the following processes:

- Three filtrate holding tanks and two discharge pumps;
- One 10-inch WWTP influent magnetic flowmeter for pacing ferric sulfate addition;
- Ferric sulfate addition to flocculate suspended solids;
- Sodium hydroxide (NaOH) addition to pH 8.5 to flocculate suspended solids;

- Two DAF units;
- Two frac tanks for oil/water separation and two discharge pumps;
- Pre-filtration bag filters;
- Four sand filters;
- Eight carbon filters;
- One treated water holding tank and four discharge pumps;
- Post-filtration bag filters; and
- One, 10-inch effluent magnetic flowmeter

The WWTP average daily flow during DMU-2 dredging was 548,000 gallons/day of treated effluent which was discharged to the New Bedford Harbor (refer to Attachment F).

2.4.5.2 <u>Wastewater Treatment Quantities</u>

The total water treated during the 2004 dredging season prior to winterization activities was 22,500,000 gallons, as measured by the WWTP influent meter (refer to Attachment F). This is in close agreement with the Area C influent flowmeter total of 21,700,000 gallons. The WWTP effluent meter however, measured a 2004 total of 15,800,000 gallons. The difference of 6,700,000 gallons is not accounted for by the volume of all solids removed from the slurry (equivalent volume of 1,200,000 gallons), therefore the WWTP effluent flowmeter should be re-calibrated or replaced for next season.

2.4.5.3 <u>WWTP Solids Generated</u>

<u>DAF Solids</u>

The floc created by chemical addition is separated from the wastewater stream primarily at the DAF (only the north unit was operated most of the 2004 season). Approximately 20 percent of the floc floated and was skimmed off and pumped back to the press feed tanks. The other 80 percent of floc removed by the DAF was settled by the lamella section of the DAF and was pumped out of the V-bottom back to the press feed tanks. If any oil was generated from the sediment dewatering process it was skimmed from the DAF. No oil was observed on top of the DAF during the 2004 season. The quantity of floc sludge separated by the DAF was not quantified.

Oil/Water Separator (OWS) Solids

DAF effluent is discharged from the mid-level of that unit and gravity flows to the OWSs. No oil was observed on top of the OWSs during the 2004 season. Mid-level floc solids did pass from the DAF to the OWSs and accumulated there. During one Saturday maintenance session half-way through the 2004 season, an estimated three-foot blanket of floc sludge was removed from both OWSs and pumped back to the press feed tanks (approximately 15,000 gallons of 2 percent sludge).

Pre-Filtration Bag Filters

Floc solids that passed through the OWSs accumulated on the pre-filtration bag filters. On frequent occasions these bags became plugged and required frequent changes. Spent bag filters/solids were disposed with filter cake.

Sand Filters

The final primary solids removal occurred on the sand filters. These units were backwashed on Saturdays at the rate of 30,000 gallons/vessel/week. Approximately 120,000 gallons/week of dilute solids backwash water were pumped back to the press feed tanks.

2.4.6 General Site Operations and Maintenance

2.4.6.1 Overview

The New Bedford Harbor Superfund Project encompasses the following sites where project operation and maintenance (O&M) functions were performed:

- Dredge Areas (DMU-2 and the Area C Cell #1 in the 2004 season) and Slurry Pipeline;

- Aerovox Area;
- Manomet Booster Pump Station;
- Area C; and
- Area D.

O&M activities at each of these areas are summarized below.

2.4.6.2 Dredge Area O&M

Due to area restrictions, a small (8-inch) H&H dredge unit was operated within Area C holding Cell #1 during the first 14 days of the 2004 season. Four different hydraulic dredge units and three dedicated 10-inch pipelines were utilized in DMU-2 during the remaining 34 operating days of the season. The four dredges consisted of two 10-inch H&H dredges, one 12-inch Mudcat dredge, and, in late October, a second 12-inch Mudcat that was brought in to replace one of the 10-inch H&H dredges. Usually only one dredge was operated in DMU-2 at a time, but when feasible, two dredges were operated simultaneously. However, as discussed in Subsections 2.3.2 and 4.8, operations utilizing the 10-inch H&H dredges in DMU-2 were problematic.

Daily dredge maintenance consisted of manually removing obstructions such as timber and large rocks from the dredge cutter head and unplugging slurry pipelines (via water flushing and air pressure) that had become clogged with settled shells, rocks, wood and debris. Weekly dredge maintenance consisted of re-fueling, engine oil changes, greasing fittings, pump maintenance and cutter-head tine replacements.

2.4.6.3 Aerovox Area O&M

The ferric sulfate injection system was operated at the Aerovox facility adjacent to DMU-2. This system consisted of one 6,500-gallon ferric sulfate solution supply tank and three manually operated chemical metering pumps, which injected this solution (66 percent $Fe_2(SO_4)_3$ solution) into three 10-inch dredge slurry pipelines. The only maintenance was tank refilling and occasional pump maintenance when plugging occurred.

2.4.6.4 Manomet Booster Pump Station O&M

Sevenson operated a dredge slurry pressure boosting station at the Manomet Street site, 3,400 feet downstream and south of Aerovox. This station consisted of three, 300-hp diesel-driven, centrifugal booster pumps, capable of up to 5,000 gpm and 90 psig each, and manifolding of three 10-inch slurry lines into two 10-inch slurry lines. Maintenance consisted of refueling, engine oil changes, greasing fittings, and pump maintenance.

2.4.6.5 Area C O&M

Area C, located 2,700 feet downstream and south of the Manomet Booster Pump Station, consists of the following facilities:

- Cell #1, Cell #2, and Cell #3 (three surface impoundments within Area C);
- Desanding Building;
- Storage Building (Rubb Building);
- Former Wastewater Treatment Plant (constructed prior to this Task Order);
- Truck Scale and Truck Decontamination Pad;
- Debris Disposal Area; and
- Site Trailers (offices, equipment, break room, guard, decontamination, and laboratory).

Brief discussions of the 2004 usage and O&M activities associated with each of these Area C facilities are presented below.

Area C

Cell #1 was dredged by Sevenson from September 1 to September 22, 2004. Only winterization activities (Subsection 2.4.9) were performed in the other cells.

Desanding Building

The Desanding Building contains the following units:

- Two, 10-inch influent magnetic flowmeters;
- Two shaker screens (separation of debris >1/4-inch);
- Two shaker screen exhaust hoods, with 6,000 cfm exhaust fans and carbon filter;
- Two V-bottom mix tanks (20,000 gallons each) with bottom augers;
- Four slurry recirculation pumps;
- Two sets of hydrocyclones, above two, 200-mesh shakers;
- Two 20,000-gallon frac tanks with level controls feeding;
- Two 300-hp diesel-driven, centrifugal booster pumps;
- Sand and debris load-out area;
- 10,000-cfm building exhaust fan with carbon filter ;
- Front-end loader with a five-cy bucket; and
- Air compressor.

Desanding personnel worked in Level D protection during the 14-day Area C Cell #1 dredging portion of the season and in Level B supplied air during 32 of the 34-day DMU-2 dredging portion of the season. Weekly maintenance consisted of screen change-outs, infrequent hydrocyclone change-outs due to abrasion, infrequent pump fitting change-outs due to abrasion, re-fueling, engine oil changes, greasing fittings, pump maintenance, and auger seal maintenance**.** In October 2004 a leak in the V-bottom auger seal water sprayed an adjacent pump motor which shorted-out, blowing the main 1,200-amp breaker and causing a power outage in the Desanding Building; the motor power connection was re-wired and made more water-resistant. At that time it was discovered that the main breaker had not received routine maintenance in four years; consequently, Jacobs has initiated routine maintenance to be performed on the main breaker panel during the winter months.

Storage Building (Rubb Building)

The Rubb building provides storage for a variety of government property. This building and property inventory is maintained by Jacobs. Sevenson repaired a 20-foot vertical rip in the building membrane during the season.

Former Wastewater Treatment Plant

This building houses previously-used treatment equipment and some government property inventory and is maintained by Jacobs. It was used by Jacobs for sieve analyses and H_2S bench testing. At the end of the 2004 production season, dozens of glass sample jars and 5-gallon buckets containing sediment samples were removed from this building and the waste storage cabinets located immediately east of the building for permitted transport to Area D, and ultimate disposal with TSCA filter cake material.

Truck Scale and Truck Decontamination Pad

The scale was used to weigh sand and debris transferred from desanding operations to the DDA. The decontamination pad was used to rinse equipment at the end of the season.

Debris Disposal Area

This area is being used to temporarily store sand and debris (under tarps) from the Desanding Building, debris from DMU-2, and various equipment and materials.

Site Trailers

These trailers are maintained by Jacobs.

2.4.6.6 Area D O&M

Area D, located 5,000 feet downstream and south of Area C, consists primarily of the Dewatering Building which houses the dewatering process units and WWTP. The Dewatering Building facility is supported by the rail yard, parking areas, a truck scale, and a few trailers (office, equipment, materials, and laboratory).

Dewatering Building

The Dewatering Building features the following mechanical and electrical components maintained by Jacobs:

- Fire alarm and sprinkler system;
- Water supply and heating;
- Building heating and ventilation, lighting, electrical, plumbing, air conditioning (support building); and
- Building security system.

Dewatering Process and Filtrate Treatment Plant

The following dewatering process and wastewater treatment equipment and instruments were operated and maintained during the 48-day 2004 dredging season plus five days of winterization:

- Eight 20,000-gallon filter press feed tanks (agitated frac tanks);
- One 10-hp induced draft centrifugal fan and carbon filter (feed tank exhaust);
- Eight high pressure, hydraulic, filter press feed pumps (six in operation);
- Eight polymer addition units;
- Six 8.1 cy, plate and frame filter presses with drag conveyors;
- One horizontal belt conveyor and one inclined belt conveyor;
- Two air compressors and a receiver tank;
- One front-end loader with five-cy bucket;
- Three, 25,000-gallon filtrate equalization tanks and two discharge pumps;
- One 10-inch WWTP influent magnetic flowmeter;
- Ferric sulfate addition to flocculate suspended solids;
- NaOH addition to pH 8.5 to flocculate suspended solids;
- Two DAF units;
- Two frac tanks OWSs and two 2,000 gpm filter pumps;
- Pre-filtration 5-micron bag filters;
- Four sand filters;
- Eight carbon filters;
- One 75,000-gallon treated water holding tank and four discharge pumps;
- Post-filtration 0.5-micron bag filters; and
- One 10-inch effluent magnetic flowmeter.

Weekly maintenance consisted of general clean-up, chemical/polymer container change-outs, pump maintenance, conveyor maintenance, floc sludge clean-outs from the filtrate equalization tanks, and sand filter backwashing.

2.4.7 Transportation & Disposal of PCB-Contaminated Material from Area C

The material separation operations performed at Area C, as described in Subsection 2.4.3 above, generated both fine and coarse screenings. The *Execution Plan* had envisioned that these materials would be characterized as TSCA or Non-TSCA materials and transported off-site for proper disposal. Based on the limited funds ultimately made available to the NBH TERC during 2004 for remedial activities, EPA and NAE subsequently made the determination that these materials should be stockpiled at the Area C DDA for ultimate disposal in 2005. Periodically, generally once or twice a week, fine and coarse screenings were separately loaded into a site truck, weighed on the Area C truck scale, and driven to the DDA. Between September 21, 2004 and November 11, 2004 the following quantities of material were stockpiled at the DDA:

Fine Screenings (Non-TSCA):	250.33 Tons
Fine Screenings (TSCA):	1,346.27 Tons
Coarse Screenings (Non-TSCA):	32.27 Tons
Coarse Screenings (TSCA):	326.18 Tons

Since material was first placed in these stockpiles, they have been continuously covered with tarps, except during those periodic occasions when material was being actively added to the pile. Details associated with movement and stockpiling of these materials are presented in Attachment G, T&D Reports, as Table G-1 (Fine Screenings Transport Log) and Table G-2 (Coarse Screenings Transport Log). PPE and other contaminated materials present on Site, such as sediment samples collected during the past few years, were transported under manifest to Area D from Area C in a single truckload on November 12, 2004 for subsequent disposal with Area D wastes.

2.4.8 Transportation & Disposal of PCB-Contaminated Material from Area D

The sediment dewatering operations performed at Area D, as described in Paragraph 2.4.4 above, produced 7,062.67 tons of filter cake that was shipped off-site for disposal in Belleville, Michigan. Transportation and disposal operations during 2004 were performed by EQ Northeast, Inc, which is a subsidiary of The Environmental Quality Company.

All shipments off-site during 2004 were transported in vehicles operating under EQ Northeast, Inc. permits in accordance with the *Transportation and Temporary Storage Plan*. Transportation for disposal of Area D TSCA filter cake was accomplished using oversize end dump semi-trailer trucks with a capacity of approximately 35 tons of filter cake. A designated group of three licensed drivers and their associated rigs were utilized for every shipment during 2004 in order to facilitate efficient and reliable transport of wastes from the Site. The Transporter supplied all required tarps, liners, and placards. The three drivers arrived at and departed the Site together to enable optimization of Jacobs team equipment and manpower. The filter cake was trucked to EQ's rail yard in Worcester, Massachusetts, where it was loaded onto rail cars for transport to EQ's Michigan disposal facility. As necessary, the drivers made up to three round trips per day to provide flexibility and accommodate production irregularities.

Due to the configuration of roads and tight turning radii in the vicinity of I-195, Washburn Street, Bellevue Avenue, and Herman Melville Boulevard, it was impractical for trucks to access Area D on Herman Melville Boulevard from the north. Consequently, vehicles traveled south on Route 18 past the Site and traveled north on Herman Melville Boulevard to Area D. Initially, trucks attempted to enter the Site from Herman Melville Boulevard using the newly constructed access driveway to the north of the Dewatering Building. This proved impractical due to the narrow width of the truck access gate and the unfortunate location of a light pole installed at the northwest corner of the Site. Consequently, for the entire season truck entry to the Site was via Hervey Tichon Avenue.

Upon arriving at Area D, the drivers pulled back their cover tarps and ribs, installed truck liners, and donned PPE while outside of the building, before returning to their cabs prior to entering the building for loading. Upon entering the building, a front end loader was used to load the stockpiled cake, together with incidental quantities of contaminated PPE, contaminated tarps, and similar items into the staged truck; distribution of cake within the truck bed was at the direction of the driver. Prior to exiting the loadout area, the truck tires, undercarriage, and sides of each vehicle were decontaminated by pressure washing. Upon exiting the building, the loaded vehicle drove onto the truck scale at Area D to determine its loaded weight. (During the first day of shipments from Area D, a tare weight was established for each vehicle prior to loading. Tare weights were performed on a couple of subsequent occasions due to changed conditions associated with vehicle characteristics and for initial tare weight verification). After the vehicle was weighed, necessary information was entered onto a Michigan Uniform Hazardous Waste Manifest, and presented to the NAE representative for signature on behalf of EPA Region 1. Prior to exiting the Site on the west side and reentering the southbound traffic flow on Herman Melville Boulevard, each driver cinched and secured all covers and tarps, inspected his vehicle, and ensured that his vehicle was in a condition to and in compliance with all requirements for travel on public rights-of-way.

From New Bedford, the drivers traveled via limited-access roadways directly to Worcester, MA. Area D Bulk PCB Remediation Waste from each convoy of three trucks was transferred into lined 100-ton capacity rail cars at the MHF Massachusetts Transload Facility located at 452 Southbridge Street in Worcester, MA for subsequent transport via CSXT Railroad to EQ's Romulus, MI transload facility; the NBH Site wastes were then offloaded to trucks for conveyance of the waste to final disposal at The Environmental Quality Company's EQ Wayne Disposal facility in Belleville, Michigan. Following disposal of the waste, The Environmental Quality Company returned the Generator second Copy of the Manifest together with an associated Certificate of Disposal to NAE.

During 2004, 210 shipments of Bulk PCB Remediation Waste were made from Area D. Jacobs maintained a log for each off-site shipment of waste from Area D that documented vehicle arrival and departure times, tare and loaded weights, vehicle registration numbers, verification of compliance with Department of Transportation regulations, manifest numbers, and other information. Details associated with the 210 shipments are presented in Attachment G, T&D Reports, as Table G-3 (TSCA Filter Cake Waste Transport Log).

2.4.9 Site Winterization

Prior to the start of winterization activities, NAE, Jacobs, and Sevenson agreed on the scope of the winterization activities, as outlined in Attachment H. Many aspects of the site winterization activities, which were initiated on November 9, 2004 and were completed on November 19, 2004, are summarized below:

- **Dredge Removals –** All of the dredges from both Area C and DMU-2 were removed from the water and. either returned to Sevenson's yard in Niagara Falls, New York or stored on site. The dredge removed from Cell #1 was stored at the DDA and two of the DMU-2 dredges were stored at Area D;
- **DMU-2 Demobilization –** The silt curtains, cables, oil booms, debris scow, and barges were removed from DMU-2 and stored at the DDA;
- **Pipeline Removal –** Following completion of dredging activities, the pipelines from DMU-2 to Area C were flushed with river water at Area C. All of the floating pipelines from DMU-2 to Area C were dismantled and towed to Pierce Mill Cove north of Area C for storage;
- **Ferric Sulfate Tank –** The ferric sulfate stored in the tank at the Aerovox parking lot was removed and the site was secured;
- **Manomet Booster Pump Station –** All equipment was dismantled and relocated to Area C;
- **Area C Dock –** All of the work boats were removed from the water and stored at Area C. In addition, the two barges and the debris scow, which were used at DMU-2, were towed to Area C and secured to the dock at Area C;
- **Desanding Building –** All residual debris and sand were removed and moved to the DDA storage area;
- **DDA Storage –** the debris and sand piles were covered and secured;
- **Area C Cells –** At the end of the season all three cells at Area C were pumped down to allow for winter precipitation. Cell #1 was drained down one to two feet, and the pump-down water was processed through the desanding and dewatering facilities. Cell #2 was pumped down five feet then refilled with city water; the pump-down water originally in the cell was processed through the desanding and dewatering facilities, while pumping of the city water was used to flush the desanding and

dewatering facilities. Cell #3, which collects Area C stormwater runoff, was pumped down six feet and the pump-down water (stormwater) was pumped into the adjacent cove.

- **Area D –** all of the filter cake was shipped offsite and the floors and equipment were cleaned and other miscellaneous tasks were completed.

On November 19, 2004, an NAE representative and a Jacobs representative visited each of the areas identified above to verify that all of the winterization activities scoped had been completed.

3.0 SAMPLING DATA AND ANALYSIS

3.1 TREATABILITY STUDIES FOR DMU-2

3.1.1 September 2004 H_2S Bench Tests

Bench scale tests were performed in September 2004 to evaluate control of hydrogen sulfide using ferric sulfate addition. Refer to Subsection 2.4.2.3 for details and findings associated with this effort.

3.1.2 Summary of October and December 2004 H_2S Bench Tests

The oil field industry routinely treats drilling fluid slurries for H_2S using "de-gassing" technologies. During October 15-19, and December 8-15, 2004, a series of bench tests was conducted to determine if de-gassing of H_2S from the dredge slurry would be a successful method of controlling H_2S, as an alternative to ferric sulfate addition used during the 2004 season. Also, tests involving the addition of NaOH and H_2SO_4 were performed to determine the amount of these chemicals required to shift slurry pH as low as 5.0 and as high as 8.5. This information would be useful for estimating operating cost if pH shifts become part of the de-gassing strategy.

The test results showed that degassing slurry at the natural pH of 7, will reliably remove H_2S from the dredge slurry (refer to Attachment D-5, October and December 2004 H_2S Bench Tests).

An evaluation of capital and operating costs is ongoing that compares ferric sulfate addition to slurry de-gassing at pH 7; this evaluation will be presented in Jacobs' forthcoming alternatives assessment report.

3.2 AIR MONITORING

Air monitoring was conducted during 2004 using several industry-accepted methods. Since PCBs were the primary chemical of concern identified for community worker health, the main focus of monitoring was to determine PCB exposure. For the Ambient

Air Monitoring Program, a low-flow sampling method for PCBs was selected for its flexibility in locating sample stations in and around the Upper New Bedford Harbor. The methodologies for the complex Ambient Air Monitoring Program is further explained in Subsection 3.2.1. Facility monitoring was routinely conducted for total VOCs, primarily chlorinated solvents. Direct-read instrumentation was used to collect data on these exposures. Facility monitoring is further explained in Subsection 3.2.2. A combination of direct-read instrumentation and integrated sample collection was utilized during 2004 production activities to monitor personnel exposures during sediment processing beginning at the dredge and including all other work areas. Personnel exposure monitoring is further explained in Subsection 3.2.3.

3.2.1 Ambient Air Monitoring

The background information and the establishment of the Ambient Air Monitoring Program for the project was developed in the document titled *Plan for the Sampling of Ambient Air PCB Concentrations to Support Decisions to Ensure the Protection of the Public During Remediation Activities, New Bedford Harbor Superfund Site, New Bedford Massachusetts* (Foster Wheeler 2001). This document was revised in January 2004 by NAE. The information provided in this subsection describes the Ambient Air Monitoring program implemented by the Jacobs team during the 2004 season.

In previous sampling events, Graseby brand Model PS-1 polyurethane foam (PUF) high volume samplers were used to collect ambient samples. These units require a 120 volt power supply and are not particularly mobile. Jacobs proposed an alternative low flow method with the added benefit of portability and the unit being self contained. All potential sample locations for the Ambient Sampling Program were selected during the modeling process and then ground-proofed for accessibility. The stations used for the 2004 season were 24, 24D, 25, 41, 47, 48, 49, 50, 51, 52, 53, 54, 55, and 56. However, only combinations of 10 of the 14 stations were used during each sampling round. A pilot test was conducted on June 30, 2004 to ensure the use of the BGI brand PQ-100 portable samplers and the low flow analytical method, EPA TO-10A, Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume PUF

Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD), January 1999 would meet the data quality objectives of the project. Samples were collected at the Aerovox parking lot and at Area D near the eastern bulkhead. The samples were analyzed for both the 209 congeners and the 10 homologues for PCBs.

In August 2004, a comparison of three analytical methods was made in an effort to minimize analytical costs. EPA Methods 8082 (Gas Chromatography with Electron Capture Detector), 680 (Low Resolution gas chromatography/mass spectrometry (GC/MS)), and 1668 (High Resolution GC/MS) were evaluated for homologue reportability, number of congeners reported, minimum detection limits base on a 7.2 cubic meter sample, possible interferences and other criteria. The only method providing all of the necessary information required was Method 1668, High Resolution GC/MS; unfortunately this was also the most expensive method of the three.

A series of seven sampling rounds at 10 station locations described in Table I-1 and depicted in Figure I-1 were completed over the course of the dredging season. Six of the rounds were during dredging operations and one was conducted post-operation as a representation of background conditions. The sample locations were identified through a series of EPA SCREEN3 Air Models. Emission rates were assumed based on previous studies for the dredging activity at DMU-2 (area source), the desanding operation at Area C (a combination of desanding point source and Cell #1 area source), and the dewatering operation at Area D (dewatering point source). All potential sample locations for the Ambient Sampling Program were selected during the modeling process and then ground-proofed for accessibility. The stations used for the 2004 season were 24,24D, 25, 41, 47, 48, 49, 50, 51, 52, 53, 54, 55, and 56. However, only combinations of 10 of the 14 stations were used during each sampling round. The 10 station locations were selected in consultation with the NAE and EPA.

Each of the samples was collected using a calibrated BGI brand PQ-100 air sampling pump programmed to run for a 24-hour time period. The sampling pump has a mass flow controller to accurately (+/-2 percent) adjust the 5-liter per minute flow based on the calibrated standard temperature and pressure. The media used was a 22 millimeter (mm)

Supelco Orbo-1500 PUF/XAD-2/PUF sample tube with a 32 mm quartz microfiber filter as the lead media. A standard chain of custody was maintained for each sample collected. The samples were analyzed for the ten PCB homologue groups by Severn Trent Laboratories, Inc. in Knoxville, Tennessee using EPA method TO-10A. Sample turn-around time varied from two weeks to four weeks depending on the sampling round.

The collected mass of each homologue group was quantified and normalized to the total volume of air collected to develop concentrations for each homologue group by the laboratory. The homologue group concentration was then summed to obtain the ambient air concentration of total PCBs. Upon receiving laboratory data, the total PCB concentration was entered into a spreadsheet to follow trends using un-validated data. Once validated data was obtained it was inputted into the Public Exposure Tracking System (PETS). PETS was developed to track exposures and provide a "trigger" of possible actions to take as a result of airborne sample concentrations. Table I-2 depicts the cumulative results of potential public exposures for the 2004 Ambient Air Monitoring Program at each of the monitoring stations. A series of Air Sampling Status Reports (PETS Curves) for 10 locations is also presented in Attachment I.

In certain instances in the PETS curves, the C1 trigger was displayed on the summary sheet. The C1 trigger is set at 1000 nanograms per cubic meter (ng/m^3), which is based on the NIOSH recommended exposure limit and states the "Measured Concentration Exceeds Maximum Occupational Limit". It is important to note that this is an erroneous statement generated within the program. The current legally mandated occupational exposure limit is set at 500,000 ng/m^3 by OSHA.

One particular sample result collected over a 24-hour period on 9/27/04 to 9/28/04 at the eastern portion of the Aerovox parking lot was at 9557 ng/m^3. This result was significantly higher than experienced in three previous sampling rounds, affecting the cumulative exposure budget by approximately 30 percent. In response to this anomalous data point, a detailed analysis of potential factors contributing the higher level was made. Potential contributing factors identified were:

- Temperature
- Wind speed and direction
- Solar radiation
- Dredging duration
- Adjunct activities
- Floating oil
- Tides
- Barometric pressure

It does not appear that temperature, wind speed, wind direction, and barometric pressure made major contributions to the elevated concentration. Solar radiation data was not evaluated due to a lack of data.

It does appear that dredging duration, adjunct activities, floating oils, and tides may have contributed significantly to the elevated concentration. It is believed that the primary contributory factors deal with the duration of activities and surface area. Up to 14 hours of dredging activities occurred during the 24-hour sampling period. Over the two work days, approximately 50 percent of the dredging occurred at or near low tide. Subsequently, the duration of supporting boating activities was higher during this sampling event than others. In addition, the low tide was a negative 0.3 feet at this time causing the source area shoreline and mud flats to be exposed for a greater time with greater surface area exposed. These exposed areas coupled with various types of floating oils increased the overall surface area for PCB vaporization.

3.2.2 Facility Monitoring

Given the experience of the past season it appears that nuisance dust and VOCs were not an issue as indicated by monitoring instrumentation within Area D.

However, carbon monoxide generated by gasoline-powered pressure washers periodically became an issue during housekeeping efforts. Direct read instrumentation was placed adjacent to the work area to measure carbon monoxide levels. If levels were such that the instrument alarmed (set at 20 ppm), the pressure washer was shut down. The exhaust was dissipated by the building's general dilution ventilation system. Carbon monoxide generated by the diesel-powered equipment was minimized through the installation and use of manufacturer-designed catalytic exhaust scrubbers. There did not appear to be excessive levels of carbon monoxide that were not readily addressed by the building's ventilation system.

The last integrated sample collected for PCBs did indicate a potential problem in the load-out/filter cake storage area. The sample was collected during a shipment of nine trucks for the day (approximately 275 tons of filter cake), during filter cake production, and during housekeeping activities. While the sample concentration was well below the permissible exposure limit, a level of 0.232 ng/m^3 was the highest obtained during the project.

Facility monitoring data are included in the daily reports for the project. Continuous logging over the course of the work shift was performed for all work locations measured. The data did not indicate any exposures during 2004.

Hydrogen sulfide became a major concern within the Desanding Building and on the dredges and work boats while dredging in DMU-2. Refer to Sections 2.4.3.1 through 2.4.3.4 for a thorough discussion regarding H_2S.

3.2.3 Personal Monitoring

To determine personnel exposures to PCBs two methods were used. The first method was to screen work areas with a direct reading respirable aerosol monitor (RAM), an MIE mini-RAM. An exposure limit of 1.5 mg/m^3 was selected for particulates not otherwise classified as representative of potential harmful exposure to PCBs in the air. The mini-RAM was held by hand at operator breathing zone (OBZ) height (approximately 60 inches off the floor or work platform) in various locations within the filter press area, waste-water treatment area, and filter cake storage/load-out area. During the use of the mini-RAM there were no exposures noted above half the exposure limit. At one point during processing, the transfer conveyor began slipping and caused a considerable amount of smoke to be generated. Readings obtained close to the point of generation did give readings in excess of the exposure limit; however, these readings were assessed to be largely caused by smoke particles. The general exhaust ventilation evacuated the smoke within a very short time. The conveyor was stopped, adjusted, and returned to operation without further problem.

The second, more accurate, means of measuring personnel exposure to PCBs was through integrated sample collection. Health and safety staff collected approximately 75 samples over the course of the year. Samples were collected using a Gillian brand personal sampling pump set at a flow rate of approximately 200 cubic centimeters/minute. The filter media consisted of an SKC brand Florisil tube (100 mg/50 mg) with a 13 mm glass fiber filter attached to the front of the Florisil tube. NIOSH's Analytical Method 5503 for PCBs was followed for analysis.

Although the samples were collected as area samples versus hanging the sampling train on the operators, the media was placed at OBZ levels and within the work area most used by personnel. Considering the low sample results obtained, this technique should be considered acceptable as representative measures of personnel exposures.

Graphics of sample dates, locations, and results are presented in Attachment I. Additional single location samples were collected within the Area D loader operator cab (3700 ng/m^3), Area D laboratory oven exhaust (4800 ng/m^3), and the Manomet Booster Pump Station (2000 ng/m^3). The occupational exposure limit to PCB (54 percent chlorine) is 500,000 ng/m^3.

None of the sample results indicated an overexposure in the work area. However, one sample taken in the Area D load-out area revealed a concentration of 232,000 ng/m^3. This concentration is being heeded as a sign that next season's filter cake load-out management scheme will be revised to ensure that "stock" is rotated to ensure the driest cake is taken out first. Additional housekeeping measures such as splatter control and increased wash downs to control dust accumulations will be implemented as well.

3.3 SAND, COARSE MATERIAL, AND OVERSIZE DEBRIS

Sampling and analytical activities associated with sediment processing activities are presented in this Subsection for solids separated out at Area C, and in Subsections 3.4 and 3.5 for filter cake and wastewater respectively. Sampling/analytical information and data associated with these materials is presented in a series of tables in Attachment J.

During the initial portion of the 2004 dredging field season, sand (greater than 200 mesh and less than ½ inch diameter) and coarse screenings (greater than ½ inch diameter) were generated by the Area C desanding operations; in late October the screen size was changed to ¼-inch openings from ½ inch, and the dividing line between the sand and coarse screenings decreased accordingly. In addition, oversize debris also was removed from New Bedford Harbor prior to dredging activities at DMU-2. In accordance with the August 2004 *FSP*, only samples of the sand were submitted for chemical analysis. It is anticipated that the coarse screenings and oversized debris will be sampled and analyzed for disposal characterization during the 2005 field season. All three waste streams (sand, coarse material, and oversize debris) are currently stored under tarps at the DDA at Area C.

During 2004 DMU-2 and Cell #1 dredging activities, composite samples of the sand were collected at about every 100 tons of sand material produced (Table J-1). Following collection, the sand samples were transported to offsite laboratories (Severn Trent in Colchester, Vermont and Newburgh, New York), and analyzed for PCBs, oil and grease (O&G), and total metals in accordance with the procedures outlined in the *FSP* and the *QAPP*. In addition, selected soil samples were submitted to GeoTesting Express in Boxborough, MA for geotechnical (grain size) analysis. The analytical results (PCBs and oil and grease) are presented in Table J-1 and the geotechnical results (grain size) are presented in Table J-2. Since the total metals results were not used for TSCA determination, the metals results were not tabulated for this *AAR*. In addition to the soil samples submitted for offsite grain size analysis, Jacobs personnel also wet-sieved screened material samples and selected filter cake samples to estimate the sand fraction of the various waste streams. As presented in Table J-2, the offsite and onsite grain size results from the same material (e.g. screened material or filter cake) were generally similar with respect to percent sand.

The basis of design for the desanding plant was to remove the cohesive fraction (silt and clays) in an effort to render the resulting sand a non-TSCA waste (less than 50 ppm PCBs). However, as presented in Table J-2, at Area C the percentage of fines passing through the hydrocylones and over the No. 200 mesh screen was greater than anticipated. Therefore, to assess the distribution of PCBs within the various sand fractions and the impact of associated silts and clays on the PCB concentrations in the sand, the following sampling activities involving sieving and split samples also were performed:

- Stockpile Sample V1-101104 collected on October 11, 2004 was split and the split sample was wet-sieved onsite with a No. 200 sieve. Both Sample V1-101104 and the sediments retained on the 200 sieve (Sample V1-101104-A) were submitted for analysis for PCBs, oil and grease, and total metals. Because of the elevated concentration of PCBs (66 mg/kg) in Sample V1-101104-A even after sieving and having the fines removed, it appeared that fines might not be the only source of PCBs; consequently, additional sieving and testing was performed as described below to assess the PCB concentrations and other characteristics associated with the sand-sized fraction.
- Stockpile Sample V1-102704 collected on October 27, 2004 also was split, and the split sample was successively wet-sieved onsite with No. 40, No. 100, and No. 200 sieves (Samples V1-102704-40, V1-102704-100, and V1-102704-200, respectively). The sand retained on the No. 40 sieve (referred to as the 40-plus sieve fraction), the No. 100 sieve (i.e. material that passed through the No. 40 sieve, but was retained on the 100 sieve), and the No. 200 sieve (i.e. the fraction captured between the 100 and 200 sieve sizes) roughly correspond to coarse, medium, and fine-grained sand, respectively. All soil samples were submitted for PCBs, oil and grease, total metals, and total organics (ASTM Method D2974) and the results were as follows:

Sample ID	PCBs (mg/kg)	O&G (mg/kg)	Total Organics (percent)
V1-102704 (unsieved)	132	1,200	3.7
V1-102704-40+	283	580	4.6
V1-102704-100	75	990	1.2
V1-102704-200	96	1,600	0.8

- Stockpile Sample V1-110304 collected on November 3, 2004 also was split, and the split sample was wet-sieved onsite with No. 40, No. 100, and No. 200 sieves (Samples V1-110304-40, V1-110304-100, V1-110304-200, respectively)in a manner similar to that associated with Stockpile Sample V1-102704. All soil samples were submitted for PCBs, oil and grease, total metals, total organics, and total organic carbon (TOC) (Lloyd Kahn Method) and the results were as follows:

Sample ID	PCBs (mg/kg)	O&G (mg/kg)	Total Organics (percent)	TOC (mg/kg)
V1-110304 (unsieved)	142	650	2.4	Not Analyzed
V1-110304-40+	83	800	4.5	38,900
V1-110304-100	62	<530	0.7	13,300
V1-110304-200	51	<430	1.2	4,030

- Stockpile Sample V1-111004 collected on November 10, 2004 also was split, and the split sample was similarly wet-sieved onsite with No. 40, No. 100, and No. 200 sieves (samples V1-111004-40, V1-111004-100, V1-111004-200, respectively). All soil samples were submitted for PCBs, oil and grease, total metals, total organics, and TOC and the results were as follows:

Sample ID	PCBs (mg/kg)	O&G (mg/kg)	Total Organics (percent)	TOC (mg/kg)
V1-111004 (unsieved)	36.2 J	<450	No Sample	No Sample
V1-111004-40+	27.7 J	<480 J	3.7	13,200
V1-111004-100	18.8 J	<510	0.7	2,810
V1-111004-200	21.8 J	<520	0.6	2,840

In addition, one sample was also collected and submitted (V1-092704) for a full suite of Toxicity Characteristic Leaching Procedure (TCLP) analysis for the purposes of waste characterization for future disposal of the sand material at a TSCA facility. A summary of these analytical results is included at the end of Table J-1, Attachment J.

3.3.1 Discussion of Analytical Results for Characterization

The PCB and oil and grease analytical results for all of the solid samples submitted for analysis (including filter cake from Area D) are summarized in Table J-1. The PCB and oil and grease analytical results for screening material only (Area C) are presented in Table J-3.

The following summarizes the results of the desanding plant sampling:

- The PCB results ranged from an estimated concentration (J) of 9.0 milligrams per kilogram (mg/kg) to 18.3 J mg/kg. Since these PCB concentrations were below the TSCA threshold concentration of 50 mg/kg, these Cell #1 sands were moved to the DDA and segregated from the DMU-2 sediments.
- The oil and grease concentrations ranged from 410 mg/kg to 890 mg/kg. There are no action levels for oil and grease concentrations detected in the New Bedford Harbor sediments. The oil and grease analyses were performed to assess potential correlation between oil and grease concentrations and PCB concentrations.

The following summarizes the results of the DMU-2 desanding sampling:

- The PCB concentrations ranged from 18.8 J mg/kg to 235 mg/kg. Since the PCB concentrations in the desanding plant material generated during the DMU-2 activities were generally above the TSCA threshold concentration of 50 mg/kg, these sands were segregated from the Cell #1 sediments.
- The oil and grease concentrations ranged from below detection limits to 1,600 mg/kg.

3.3.2 Discussion of Split Sample Analytical Results

The following observations were made on the results of the split samples of the three soil samples (V1-102704, V1-110304, and V1-11104) that were submitted for PCBs, oil and grease, TOC, and total organics:

- Of the sieve fractions (No. 40-plus, No. 100, and No. 200, which are from coarsest to finest), the highest percentage of organic matter was detected in the No. 40-plus sieve fraction.
- For the split samples for V1-110304 and V1-11104, the highest TOC concentrations were detected in the No. 40-plus sieve fractions.
- Concurrently, the highest concentrations of total PCBs in the splits of Samples V1-102704, V1-110304, and V1-11104 were detected in the No. 40-plus sieve fraction at concentrations of 283 J mg/kg, 83 mg/kg, and 27.7 J mg/kg, respectively.
- Based on the foregoing, it appears that the highest concentrations of PCBs are present in the coarser fraction of the desanding plant sand, which correlates with the highest

levels of organics. The removal of this organic fraction from the sand may prove critical in making the sand Non-TSCA. However, unlike the total PCB and TOC concentrations and percentage of total organics, there were no discernable trends in the oil and grease concentrations that correlated with the No. 40-plus, No. 100, and No. 200 sieve samples.

3.4 DEWATERED SEDIMENT

During the 2004 season, the dewatering process at Area D produced filter cake that was all disposed offsite as TSCA waste. In accordance with the August 2004 *FSP*, composite samples of the filter cake were collected at a frequency of approximately 1 sample per 550 tons of filter cake produced and submitted for analysis for total PCBs, metals, and oil and grease (Table J-1). The purpose of collecting these samples was to develop a running analytical profile of the filter cake waste and to monitor performance of the dewatering process. As presented in Table J-1, all of the filter cake submitted for analysis was greater than the 50 mg/kg criteria for TSCA waste.

Selected samples were also submitted for geotechnical analysis at the offsite laboratory (Severn Trent) and a number of samples were wet-sieved at Area C to determine the sand fraction of the filter cake (Table J-2).

In addition, one sample was also collected and submitted (Sample V2-092704) for a full suite of TCLP analysis for the purposes of waste characterization for disposal of the filter cake material at the TSCA facility in Michigan. At the request of the disposal facility, a sample of the filter cake (Sample V2-101504) generated during the dredging of Cell #1 was also collected and submitted for TCLP metals only. The TCLP analytical results are presented in Appendix J at the end of Table J-1. The TCLP analyses passed the disposal facilities criteria to be land filled as a TSCA waste.

3.4.1 Discussion of Filter Cake Analytical Results

The PCB, oil and grease, and grain size results for filter cake samples are summarized in Table J-4. The following summarizes the results of Cell #1 and DMU-2 dewatering plant filter cake plant sampling activities:

- PCBs and oil and grease were detected at concentrations of 133 mg/kg and 4,300 mg/kg, respectively in the one sample that was collected from Cell #1 filter cake.
- The DMU-2 PCB concentrations ranged from 171 J mg/kg to 1,270 J mg/kg. All of the DMU-2 PCB concentrations were above the TSCA threshold concentration of 50 mg/kg.
- The oil and grease concentrations ranged from below detection limits to 3,500 mg/kg.
- The grain size for the samples submitted for offsite analysis ranged from 2.5 percent to 55 percent sand as presented in Table J-2.

3.4.2 Comparison of Filter Cake and Desanding Plant Analytical Results

As discussed in Subsection 3.3, prior to the 2004 season, it was assumed that the majority of the contaminants of concern (PCBs and oil and grease) present in the New Bedford Harbor sediment would be associated with the cohesive (silts and clays) fraction of the dredged sediment. Table J-5 was created to present a side-by-side comparison of PCB and oil and grease concentrations for filter cake (Area D) and screened material (Area C) samples collected from similar time frames. The following observations were made of the data:

- For the material dredged from Cell #1, the PCB and oil and grease concentrations were both an order of magnitude higher in the filter cake samples than in the screening material samples. For instance, in the filter cake Sample V2-091604, PCBs and oil and grease were detected at concentrations of 133 mg/kg and 4,300 mg/kg, respectively. In comparison, in the corresponding sand Sample V1-091004, PCBs and oil and grease were detected at concentrations of 18.3 J mg/kg and 410 mg/kg, respectively.
- For the material dredged from DMU-2, PCBs also were detected at concentrations much greater in the filter cake samples (in some cases an order of magnitude) than in the desanding plant samples. This observation confirms the assumption that the majority of the PCBs are contained in the cohesive (silts and clay) fraction of the dredged material (Table J-5).
- However, for the material dredged from the DMU-2, in some cases the oil and grease concentrations were greater in the screened material samples than in the filter cake samples. For example, oil and grease was detected at a concentration of 1,400 mg/kg in desanding plant sample V1-100404 collected on October 4, 2004, compared with an oil and grease concentration of 480 mg/kg detected in the October 1, 2004 filter cake sample V2-100104. This indicates that the PCBs may not be associated with the elevated oil and grease materials (desanding plant sand) and are associated with cohesive (silts and clays) and in some cases with TOC concentrations or high organic

matter percentages. The filter cake samples were not submitted for either TOC or percent organic matter analysis.

3.5 WASTEWATER

During the 2004 dredging season, water samples were collected at the influent, mid-point, and effluent sampling ports to evaluate the effectiveness of treatment and to determine whether treated water is acceptable for discharge to the harbor. All of the WWTP sampling activities were conducted in accordance with the *FSP*. The influent and mid-point samples were grab samples collected from sampling ports. The effluent samples were collected utilizing a composite sampler provided by NAE. The wastewater samples were packaged and transported to the contract laboratories, and analyzed for PCBs, copper (Cu), chromium (Cr), cadmium (Cd), and lead (Pb), in accordance with the procedures outlined in the *FSP* and the *QAPP*. The analytical results are summarized in Table J-6 and are discussed below.

Water quality parameters were recorded during each sampling event at the influent, mid-point, and effluent sampling ports. These water quality parameters included pH, conductivity, turbidity, temperature, salinity, dissolved oxygen (DO), and oxidation reduction potential (ORP) and are summarized in Table J-7. The instrument used to measure the water quality parameters was switched from a Horiba U-10 to a YSI 6920 after the September 16, 2004 sampling event due to problems with the pH measurements.

3.5.1 Discussion of Analytical Results

The discharge goals for wastewater treatment are presented below in Table 3-1.

Table 3-1 Wastewater Treatment Plant Discharge Goals

Analysis	Surface Water Discharge Treatment Goal (µg/L)
PCB (per Aroclor)	0.065
Metals	
Cd	9.3
Cr	50
Cu	5.6
Pb	8.5

Influent Concentrations. Various Aroclors of PCB were detected in the influent samples at concentrations ranging from 1.1 micrograms per liter (µg/L) to 170 µg/L. All of the detections of Cd in the influent water were from samples collected during the DMU-2 dredging activities at concentrations ranging from 1.5 µg/L to 1.6 µg/L. Cr was detected in the influent samples at concentrations ranging from 2.0 µg/L to 36.9 µg/L. Pb was detected in the influent water at concentrations ranging from below detection limits to 74.3 µg/L. Cu was detected in the influent samples at concentrations ranging from 9.6 µg/L to 95.4 µg/L. The highest influent concentrations of PCBs, Cu, Cr, and Pb were detected in samples collected during the DMU-2 dredging activities.

Mid-Point Concentrations. PCBs, Cd, and Pb were not detected above the laboratory detection limits in the mid-point water samples, during treatment of wastewater generated during the dredging of both Cell #1 and DMU-2. The mid-point concentrations of Cu ranged from below detection limits to 4.9 µg/L. The mid-point concentrations of Cr ranged from below detection limits to 4.0 µg/L (Table J-6).

Effluent Concentrations. During treatment of water generated during the dredging of both Cell #1 and DMU-2 operations, PCBs and Pb were not detected above the laboratory detection limits in the effluent water samples. The effluent concentrations of Cu ranged from below detection limits to 4.2 micrograms per liter (µg/L). Cd was detected above the laboratory detection in only one effluent sample at a concentration of 0.54 µg/L. The effluent concentrations of Cr ranged from below detection limits to 3.4 µg/L. Therefore, the surface water discharge treatment goals were met for PCBs, Cd, Cr, Cu, and Pb throughout the season.

Effectiveness of Treatment. Therefore, a comparison of the influent, midpoint, and effluent concentrations of PCBs and the selected metals indicates that the WWTP is effective at removing the contaminants of concern from the wastewater prior to discharge to the surface water of the New Bedford Harbor.

3.6 MASS BALANCE CALCULATION

3.6.1 New Bedford Harbor Water Balance/Solids Balance Overview

The 2004 remedial activities associated with the New Bedford Harbor Superfund Project removed and dewatered solids from Cell #1 and DMU-2. Because Cell #1 materials were only approximately 11 percent of the total volume dredged, this discussion considers only DMU-2 operations.

The overall processing train consisted of the following primary processes that separated solids from water:

- Dredge and pump sediment slurry from DMU-2, via slurry pipeline to Area C;
- Separate wet solids coarse material from slurry using Area C coarse screen shaker;
- Separate wet solids sand from slurry using Area C 200-mesh screens;
- Separate wet solids sediment from slurry using Area D filter presses; and
- Separate residual solids from wastewater using Area D Wastewater Treatment Plant, recycling solids back to filter press feed tanks and discharging treated water to New Bedford Harbor.

This discussion compares the July 15, 2004 15,000 cubic yard Mass Balance (Proposal Mass Balance) that was included in Jacobs' August 13, 2004 Response to Request for Proposal No. 4, with Sevenson Operational Monitoring Data (Monitoring Data) as presented in Attachment F and Jacobs solids and water balance calculations (Calculations) as presented in Attachment E. The purpose of this comparison is to better understand these balances and identify any improvements that may be implemented in the 2005 dredging season.

The Proposal Mass Balance calculations were based on DMU-2 data, bench test data, and 2004 production assumptions. Information presented as Monitoring Data is based on totalized flowmeter readings, solids grab samples/dry solids analysis, and solids quantity estimates. Water balance information associated with Calculations is based on flowmeter data, flow estimates, and other flowmeter data, while solids balance information is based on Area C weigh-scale data and filter cake estimates; note that Attachment E table entries used for Calculations are made only for the days when Area C solids were weighed and transferred.

3.6.2 Solids Balance

Based on a 37-day DMU-2 dredging season in 2004, the Proposal Mass Balance calculations anticipated dredging a total of 7,038 dry tons of all solids from DMU-2, that would in-turn separate into 1,577 dry tons of coarse materials/sand at Area C and 5,462 dry tons of filter cake at Area D. That is a split of 22 percent separated at Area C Desanding and the remaining 78 percent separated at Area D Dewatering. If pro-rated for the actual 34-day DMU-2 operating days, the Proposal Mass Balance solids expected would be a total of 6,164 dry tons of all solids from DMU-2; that would in-turn separate into 1,505 dry tons of coarse materials/sand at Area C and 4,932 dry tons of filter cake at Area D.

The actual scale-weighed solids separated during the 34-day DMU-2 season were a total of 5,686 dry tons of all solids from DMU-2, that were separated into 1,279 dry tons of coarse materials/sand at Area C and 4,407 dry tons of filter cake at Area D. There is approximate agreement between the anticipated 22 percent and 78 percent split between Area C and Area D materials and the actual split observed, 20.8 and 79.2, respectively. The observed data for the solids and water balance is included as Attachment E.

The actual scale-weighed solids separated during the 14-day Cell #1 dredging period were a total of 478 dry tons of all solids, separated into 226 dry tons of coarse materials/sand at Area C and 252 dry tons of filter cake at Area D (refer to Attachment E).

The 2004 total Cell #1 plus DMU-2 quantities (6,393 dry tons of all solids, 1,505 dry tons of coarse materials/sand and 4,888 dry tons of filter cake) presented in Attachment E compare very well with the operating-day adjusted solids projected in the Proposal Mass Balance (6,467 dry tons of all solids, 1,449 dry tons of coarse materials/sand and 5,018 dry tons of filter cake).

3.6.3 Area C Feed Solids

Daily grab samples were collected from the Area C coarse screen shaker (influent) and analyzed for dry solids content. For DMU-2, the average influent percent dry solids associated with Monitoring Data presented in Attachment F calculated to 13.5 percent, whereas the calculated average influent percent dry solids associated with Calculations presented in Attachment E is 6.3 percent based on scale-weighed Area C solids. The difference between these numbers is that grab samples associated with Monitoring Data information are only a brief snapshot of the dry solids content of the slurry, whereas using scale-weighed solids data is a more reliable way to back-calculate the actual dry solids content of the slurry "after-the-fact".

3.6.4 Area D Feed Solids

Daily grab samples were collected from the Area D filter press feed tanks (influent) and analyzed for dry solids content. For DMU-2, the Area D average influent percent dry solids associated with Monitoring Data presented in Attachment F calculated to 6.4 percent. That number is contrasted with the calculated Area D average influent percent dry solids of 3.8 percent after dilution from all sources (refer to Attachment E). Area D dilution sources are pipeline flushing, Area C and D wash downs, polymer make-up, backwash, and filtrate monitoring water.

According to the Proposal Mass Balance, the anticipated feed of 4.8 percent dry solids should have produced 220 tons/day wet solids filter cake (66 percent dry solids). Instead, the actual 3.8 percent dry solids feed produced an average 208 tons/day wet solids filter cake (average 62 percent dry solids).

3.6.5 Water Balance

As with the solids balance, the water balance presented in Attachment E is for DMU-2 only, since most water flows occurred during that operation. The DMU-2 total slurry flow to the Desanding Building was 79,300 tons of water (refer to Attachment E). From that slurry flow, 3,100 tons of water was removed with coarse screenings, sand, and filter cake. An additional equivalent of 5,000 tons of water volume was removed as solids (debris, sand, sediment). That left 71,200 tons of water to be treated and discharged. Jacobs estimated water input into the overall process (based on 80,000 gallons per week city water dilution sources) was 2,000 tons, bringing the total amount treated and discharged up to 73,200 tons. The actual WWTP influent flowmeter total for DMU-2 was 81,100 tons. This indicates that Jacobs water input estimate is likely to be low by the 7,900-ton difference, or 56,000 gallons/day.

3.7 POST-DREDGE CONFIRMATION SAMPLING

ENSR (the NAE contractor for the New Bedford Harbor sediment and surface water sampling) collected post-dredge confirmation samples and progress samples during the 2004 DMU-2 dredging activities. The sampling activities were conducted in accordance with the procedures presented in the *Final Confirmatory Sampling Approach, New Bedford Harbor Superfund Site, July 2002*, and the *Sampling and Analysis Plan*, *New Bedford Harbor Superfund Site, Revision 21, June 2002*. The results of these sampling events are presented in ENSR's reports entitled *Water Quality Monitoring Summary Reports 2004* and *Sediment Sampling Summary Reports 2004*.

3.8 LONG-TERM MONITORING

As part of the Long-Term Monitoring Program, Battelle conducted sediment and water sampling, throughout the 18,000-acre New Bedford Site prior to the start of the 2004 dredging season. The purpose of these sampling activities was to assess the effectiveness of the NBH remediation efforts. The sampling was conducted in accordance with the Long Term Monitoring plan that was developed by the EPA's research laboratory, Atlantic Ecology Division in Narragansett, Rhode Island. As with the post-dredge confirmation activities discussed above, the results of these sampling events are beyond the scope of this document.

3.9 HEALTH AND SAFETY STATISTICS

During the course of the 2004 dredging season, 72,110 labor hours were expended with zero E-1s (doctor visit due to work-related injury) or lost time incidents. During this time there were only four first aid cases. There were however, four incidents listed below that resulted in changes to operations.

- 7/29/04: Release of approximately 10 gallons of petroleum-based hydraulic fluid into the Acushnet River. As a corrective action after this incident, all hydraulic fluid used in equipment operating on or near the water were changed to vegetable oil based fluids.
- 8/2/04: A near-miss while operating an all-terrain crane. The crane was overloaded and resulting in a tipping condition. As a corrective action, more scrutiny was given to all crane lifting operations.
- 9/8/04: Hydrogen sulfide was released from the slurry in the desanding operations building in concentrations requiring respiratory protection. As a corrective action, a ferric sulfate injection system was installed to H_2S formation in the building. Operations were modified to enhance local exhaust ventilation and implement supplied air respiratory protection for all workers.
- 11/9/04: Release of a vegetable-oil based hydraulic fluid from dredging operations in DMU-2.

Health and safety plans (4) were developed for the season's operations and four existing health and safety plans were revised. Throughout the field season, 23 activity hazard analyses were written for all site operations. Seventy-nine personnel attended site-specific training. Integrated samples were collected for exposure to PCBs, hydrogen sulfide, and hydrogen cyanide. There were no overexposures indicated by these samples' results. Specific information related to the above information and a breakdown of Safety Observation Reports by category are presented in Attachment K.

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4.0 LESSONS LEARNED/CONCLUSIONS

4.1 GENERAL

This Section evaluates over a dozen activity areas associated with the 2004 field season and examines experiences and insights gained, and ways that these lessons may be utilized going forward.

4.2 HEALTH AND SAFETY

Several health/safety modifications were introduced during the season in response to situations that occurred; other modifications should be considered for implementation prior to next year's operations. These health and safety related lessons, whether already implemented or proposed, are briefly discussed in the paragraphs below.

A petroleum-based hydraulic leak of approximately 10 gallons occurred from the operation of a long-stick excavator while in the Acushnet River. Afterwards, the hydraulic fluid was changed to a vegetable-based fluid on all hydraulic equipment operated on or near the water.

Occupational exposure limits had to be adjusted for a 12-hour workday using the Brief and Scala Method.

Noise monitoring was accomplished for all work locations to assess occupational exposures. Hydraulic pumps appear to be the main source of noise introduced into the dewatering operations, while the building's general dilution ventilation system contributes to the overall background noise level. Should additional noise be introduced into the operation by new equipment or by existing equipment through malfunction or excessive wear, double hearing protection may be necessary to protect workers from excessive noise exposures until engineering controls can be established and installed.

Health and safety issues and items that require additional focus going forward include the following:

- On-going supervisory and management training in hazard recognition and control would benefit the operational safety of the project.
- Additional integrated VOC monitoring is necessary to better characterize potential exposures at the dredge and desanding operations.
- A better system of filter cake management is needed to minimize any potential air-borne exposures to PCBs.
- A means is needed to minimize the surface area of floating oils generated during dredging thereby decreasing a sizeable emission source.
- If operational changes are made to the treatment system such as hydrogen sulfide treatment, an abbreviated process hazard analysis (PHA) will be necessary. The initial PHA identified several types of hazards that were easy to correct thus minimizing potential physical injury of workers.
- All expectations and methods necessary to execute the Ambient Air Monitoring Program must be understood by all parties prior to next season.
- Task planning by the crews must be increased through the use of the Safe Plan of Action.

4.3 QUALITY

The Corps of Engineers' three-phase quality control process was utilized effectively this year. Definable Features of Work (DFW) were identified based on the key elements of the *Execution Plan* and the performance criteria established in each Task Order Modification. Engineering submittals, equipment assembly and installation procedures, and project planning documents (e.g., Field Sampling Plan, Air Monitoring Plan, Construction Quality Plan, etc.) were used to identify key inspection points within each DFW. A quality control tracking log was developed to post action items identified at Preparatory Meetings, Initial Inspections, and Follow-up Inspections. The log was reviewed and updated at weekly progress meetings between the Jacobs team and NAE.

The three-phase quality control process was used effectively to plan work and monitor progress against established plans and specifications. However, with multiple operations in progress concurrently (i.e., debris removal, dredging, ferric sulfate injection, booster pump operation, desanding, dewatering, wastewater treatment, and waste disposal), the potential for operational interruption of any one of these processes was significant. Examples of process interruptions that occurred this field season include:

- Dredge pump failure due to debris caught in pump;
- Dredge pipeline clogging due to insufficient slurry velocity;
- Ferric sulfate system failure due to failure and operator error;
- Desanding operations shut down due to clogging within shaker screen components;
- Low production of dewatering system due to low solids content in feed slurry.

A quality control lesson learned from these interruptions is that an increase in the frequency of site inspections could potentially reduce delays and lost time. Action items that are generated from follow-up inspections are intended to enhance productivity through proactive process improvement. To accomplish this, a more frequent and rigorous inspection program should be implemented, thereby increasing the opportunity to identify and resolve problems.

4.4 SUBMITTAL PROCESS

A complete list of submittals was presented to NAE under Modification 1. The submittal list included engineering specifications of the equipment used for each of the processes (i.e., dredging, desanding, dewatering, etc.) and manufacturer cut sheets of materials used (i.e., HDPE pipe, chemical polymers, buoys, lights, etc.). NAE resident staff loaded the submittal list and a list of the project planning documents (*SSHP*, *FSP*, *QAPP*, etc.) into the USACE RMS data base. As submittals were made to NAE for review and approval, a transmittal form ENG 4025 was developed through the RMS system.

The "on-board" submittal review process, where NAE reviewed submittals during mobilization, was effective at providing NAE the necessary information without delaying the schedules set for installation. As a result, the complete sediment processing and wastewater treatment systems were installed and tested within 12 weeks of the authorization to proceed, a process that could have taken 4 to 6 weeks longer using a standard submittal/review/comment/resolution process. The on-board review process should be continued on future submittals of temporary systems installed on the project.

4.5 GENERAL MOBILIZATION

When Jacobs received Modification 2 from NAE in late May, Jacobs in turn immediately issued Sevenson a delivery order for Mobilization. The planning and pre-purchasing work done by Sevenson, prior to receiving their contractual notification to proceed from Jacobs, was instrumental in meeting the aggressive schedule presented in the proposal. Recognizing the long lead procurement requirements for the HDPE pipe and the Area C temporary structure, Sevenson ordered these materials approximately 6 weeks prior to receiving their contract. Had these materials not been ordered early, the dredging activities would have extended into January, 2005 if weather proved favorable in order to accomplish the same amount of removal. If weather had not been favorable, it may not have been accomplished this season.

The primary lesson leaned under mobilization is that greater lead time for contractor procurement activities must be added to future schedules. This will enhance the team's ability to make timely purchases of long lead time items and could assist in establishing procurement agreements with local vendors.

4.6 SYSTEM STARTUP AND SHAKEDOWN

The objective of system shakedown was to qualitatively evaluate the treatment systems put in place. The process for system shakedown included dredging material from Area C Cell #1 through the desanding, dewatering, and wastewater treatment systems.

Dredging the material in Cell #1 became problematic for use during system shakedown due to the presence of stone, road base materials, cobbles, bricks, and debris that became lodged in the dredge auger, the pipeline, and the primary shaker unit. Due to the high solids removal at the desander, the resulting slurry to the filter presses had a low percent solids content. Consequently, filter cake production time was excessive, making an objective evaluation of the system more difficult.

The lesson learned during the shakedown process was that the nature of the dredge material (i.e., percent solids in the feed slurry to the filter press) should be verified prior to initiating operations. Having a better understanding of the type of materials to be dredged will facilitate a more qualitative evaluation of the dewatering process. In addition, it may be necessary to excavate the material from Cell #1 rather than using a hydraulic dredge.

The other systems in the treatment train operated efficiently during the shakedown period.

4.7 DEBRIS REMOVAL

As discussed in Subsection 2.4.2.2, the debris removal activity conducted in DMU-2 lacked the vertical control sought by EPA and NAE and caused elevated turbidity in the water column; consequently this activity was terminated after "sifting" over a relatively small area. The method of debris removal employed involved dragging a perforated bucket through the sediment with an excavator. The material removed included tires, metal posts, wood, and rocks. After the operations were discontinued, debris encountered by the rotating dredge head would either clog the auger or become lodged in the dredge pump, often causing the dredging operations to be temporarily suspended in order to remove the debris and/or make repairs to the dredge. Non-intrusive and/or less intrusive debris removal options that do not cause high turbidity concerns should be evaluated prior to conducting future dredging campaigns.

4.8 DREDGING

Lessons learned during the Area C Cell #1 and DMU-2 dredging activities are discussed below.

4.8.1 Cell #1 Dredging

The cobbles, bricks, and debris encountered while dredging in Cell #1 presented difficulties for the dredge, and hampered its ability to operate effectively. The exact nature of the material in the cell was not completely understood by Jacobs until dredging operations were underway. Attempts were made to modify the discharge pipeline and move the dredge into different parts of the cell, but the larger debris continued to hamper dredge progress. The decision was made on September 28, 2004 to terminate dredging attempts in Cell #1 due to excessive downtime caused by the rocks and debris. The lessons learned from Cell #1 dredging are as follows:

- Take soil samples to confirm the nature of the materials (i.e., size, depth, debris content) prior to initiating additional dredging activities in Cell #1.
- Explore options other than hydraulic dredging to remove the contaminated material from Cell #1.

4.8.2 DMU-2 Dredging

Three dredges were initially mobilized for DMU-2 dredging; one Mudcat Model MC-2000 and two 12-inch “H&H” dredges (ESG Manufacturing model MDS 210 equipped with a 12-inch H&H dredge pump). The rationale for three dredges was to have two operating and one on standby in the event that one dredge broke down. The dredge pumps on both dredge models were large enough to meet the original total dynamic head (TDH) design condition of the dredge pipeline. However, due to variations in the pumps between the two dredge designs, the Mudcat dredge was capable of producing greater discharge pressure than the H&H dredge.

The addition of the ferric sulfate feed system for H_2S control required re-routing the dredge discharge pipeline to the feed system located on the Aerovox parking lot. This modification increased the TDH in the pipeline from the original design. The increased TDH made the H&H dredges incapable of producing the required discharge pressure to effectively carry the slurry to the Manomet Booster Pump Station. As a result, sedimentation and ultimately complete blockage occurred within the pipeline. To clear the pipeline, the dredge operations were shut down for several hours while reversed flow and compressed air injection techniques were implemented. The Mudcat dredge, with the larger dredge pump capacity, was capable of keeping the slurry in suspension, minimizing the sedimentation situation in the pipeline.

Due to the sedimentation problems in the pipeline, the H&H dredges were taken out of service in the DMU, leaving the Mudcat as the only available dredge until a second was mobilized in late October. As a lesson learned, future dredging operations should be conducted using over-designed dredge pumps, allowing flexibility for design modifications as field operations dictate.

4.9 PIPELINE

The HDPE pipeline was installed in three segments: a floating section with flexible joints from the dredge to the ferric sulfate feed system, a floating segment from the ferric feed system from the dredge to Area C, and an anchored segment from Area C to Area D. Lessons learned for each segment of the pipeline are discussed below.

4.9.1 Flexible Dredge Pipeline to Ferric Feed System

One end of the pipeline was held in a fixed position on shore at the ferric sulfate feed system, the other end was connected to the dredge. As the dredge moved across the DMU, the flexible joints in the pipeline made it possible to "coil-up" the pipe as the dredge moved near the shore, and straighten it out as the dredge moved away from shore. The shore-land end of the pipe would become grounded during low tide. This created maneuverability problems for the dredge, occasionally causing downtime until the water level rose on the incoming tide. In future near-shore dredging operations, the dredge and pipeline orientation should be designed to alleviate this condition.

4.9.2 Floating Dredge Pipeline from Ferric System to Area C

Three parallel pipelines (one for each dredge) were floated along the west shoreline of the Upper Harbor from Aerovox to the Manomet Booster Pump Station where they were landed for connection to the booster pumps. Two parallel pipelines were deployed along the western shore from the booster pumps to the manifold connection at Area C. The pipelines from Aerovox to the booster pumps occasionally clogged with slurry debris. The apparent cause of clogging was associated with inadequate flow velocity within the pipeline. This condition should be fully evaluated and corrective actions put in place prior to initiating dredging in 2005.

4.9.3 Anchored Dredge Pipeline from Area C to Area D

This segment of the pipeline was installed and maintained successfully. No lessons learned were identified.

4.10 SURVEY ACTIVITIES

Bathymetric survey data collection and analysis can be enhanced using multibeam sonar; side scan sonar; and/or CHIRP / sub-bottom profiling systems as demonstrated by CR Environmental this dredge season under subcontract with ENSR; during 2005 will evaluate the usefulness of these tools for future dredging surveys. A robust data set of the dredge area should be created weekly. Evaluation of the survey data could be done within 24 to 48 hours, with graphical representation tools used to display 2- and 3-dimensional displays of the dredge progress. The weekly survey data could be used to calculate dredged material volume calculations.

4.11 COARSE AND FINE MATERIAL SEPARATION AT AREA C

Prior to the 2004 season, it was assumed that the PCBs were associated with the finer fractions of the NBH sediment and by separating sand and other coarse non-cohesive materials from these silts and clays, the resultant sand would be Non-TSCA. However, review of the grain size data, in conjunction with the PCB analytical data for the sand, resulted in the following observations:

- The desanding process is not 100 percent effective at removing cohesive silts and clays from the sand processed at Area C. The percentage of sand present in the fine screened material ranged from 77.4 percent (a September 24, 2004 onsite sample) to

91.8 percent (an October 20, 2004 offsite sample). The average sand content for all samples of the fine screened material was 85.8 percent;

- For the DMU-2 sediments, analytical results following wet sieving show that even if removal of the cohesive fraction (i.e. silts and clays) was 100 percent effective, the remaining sand fraction would still be classified as TSCA (PCB concentrations greater than 50 mg/kg);
- Of the non-cohesive fraction, analytical results suggest that the highest concentrations of PCBs are present in the larger sand particles (the fraction retained on the No. 40 sieve), which also exhibited the highest TOC concentrations and percentage of total organics;
- Based on the foregoing observations, the current desanding process at Area C is not effective in rendering the sand as Non-TSCA, at least considering the elevated concentrations seen in DMU-2. This seems to be true because the desanding process is not effective in removing the finer grained sediments that have been shown to be TSCA and there appears to be a high percentage of organics in the coarse fractions that may be retaining PCBs. Therefore, to potentially render the sand (i.e. fine screened material) Non-TSCA, both the finer fractions (i.e. cohesive silts and clays) and the organic fractions of the fine-screened material need to be removed.

4.12 SEDIMENT DEWATERING AT AREA D

4.12.1 Personnel H_2S Control

Per Sevenson, ferric sulfate addition caused sediment dewatering to be slower, decreasing the rate of filter cake production. It is recommended that this negative effect of the ferric sulfate on polymer agglomeration be demonstrated quantitatively through bench scale testing in a controlled laboratory setting. Using data generated from the bench tests, appropriate modifications or alternatives to personnel H_2S exposure controls should be evaluated and implemented for the 2005 dredging season.

4.12.2 Dilute Press Feed Solids

A lesson learned from the 2004 season at the Area D dewatering process was that the observed average percent dry solids filter press feed was 3.8 percent versus the anticipated 4.8 percent average. The lower solids content in the slurry caused filter press run time to extend and produced more filtrate water to process. An evaluation of practical processes to increase the feed solids in the slurry should be completed and appropriate changes should be made to the desanding/dewatering systems.

4.13 SAMPLE COLLECTION, ANALYSIS AND REPORTING

During the 2004 dredging season, samples were submitted for offsite analysis from the following three processes: the desanding plant at Area C (sand), the dewatering plant at Area D (filter cake), and the wastewater treatment plant at Area D (influent, mid-point, and effluent samples). In general, the sampling and analytical procedures conformed to initial planning as presented in the *FSP*.

4.14 T&D

Due to using EQ Northeast, Inc. as a subcontractor, the team was able to optimize labor efficiency in the area of T&D activities, as EQ installed their own liners and covers, and arrived on Site together and on a flexible pre-arranged schedule. Due to the efficient experience with respect to T&D operations at Area D during 2004, no changes to this element of the work are recommended. To enhance the safety operations in the T&D load out area, diligence will be maintained to ensure the oldest filter cake is loaded out first so that dry dust generation is minimized.

4.15 POSSIBLE PROGRAM IMPROVEMENT ACTIVITIES

Based on a review of the activities of the 2004 dredging season, over a dozen aspects of the project have been identified as areas for possible improvement for the upcoming 2005 season. NAE has identified H_2S control and the rendering of the fine screened material at the Desanding Building as Non-TSCA as two aspects of the remediation effort that are of special importance for the upcoming 2005 operations. NAE has requested that alternatives for these two operations be presented in the Alternatives Analysis that Jacobs is preparing for the 2005 season.

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ATTACHMENT A

Summary of 2004 Activities

Attachment A
Summary of 2004 Activities
New Bedford Harbor Superfund Project

Date	Activity	Summary
Revise/Submit Planning Documents		
Draft May '04 Final July '04	Submit Execution Plan - *Execution Plan 2004, 2004 New Bedford Harbor Remedial Action, New Bedford Harbor Superfund Site, New Bedford, MA*	Submittal of Execution Plan outlining the remediation of the New Bedford Superfund Site to be accomplished for Fiscal Year (FY) 2004 and 2005.
Draft April '04 Final Sept. '04	Site Safety & Health Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft May '04 Final Sept. '04	Emergency Response Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft May '04 Final August '04	Construction Quality Control Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft May '04 Final August '04	Field Sampling Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft June '04 Final September '04	Quality Assurance Project Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft July '04 Final November '04	Regulatory Compliance Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft May '04 Final August '04	Transportation & Temporary Storage Plan	Revised and updated existing plan prepared by Foster Wheeler.
Draft May '04 Final August '04	Environmental Protection Plan	Includes plans for environmental protection around each of the major components of the dredging, desanding, dewatering and water treatment systems.
Submittal of Initial Task Order/Subsequent Modifications		
Submitted 2/5/04	Initial Task Order	**Tasks covered under Initial Task Order include following**: Review documents, attend meetings, prepare Execution Plan, and revise site plans.
Submitted 5/6/04	Modification 1	**Tasks under Mod. 1 include following**: Submittal of planning documents.
Submitted 5/24/04	Modification 2	**Tasks under Mod. 2 include following**: General mobilization, dredge, installation of dredges, treatment train, pipelines, and completion of Dewatering Facility Air Emissions Contingency Plan.

Attachment A
Summary of 2004 Activities
New Bedford Harbor Superfund Project

Date	Activity	Summary
Submitted 8/13/04	Modification 3	**Tasks under Mod. 3 include following**: System start-up and shakedown; dredge CDF Cell 1 and DMU-2; debris, coarse and fine material separation at Area C; sediment dewatering at Area D; wastewater treatment at Area D dewatering facility; sample collection, analysis and reporting; general operations and maintenance; T&D of PCB contaminated material from Area C and D (including options for both); and proposal preparation and winter shutdown.
Submitted 10/12/04	Modification 4	**Tasks under Mod. 4 include following**: expedited ambient air monitoring lab analysis, system modifications in response to elevated hydrogen sulfide concentrations at Area C; foreign pipeline crossing; EPA open house support; phone system and LAN connection; relocation of booster pumps; sampling equipment; and a bench scale.
Submitted on 10/14/04	Modification 5	**Tasks under Mod. 5 include following**: up to 11 days of environmental dredging, desanding/dewatering, wastewater treatment, transport, disposal, and several other tasks associated with the removal of contaminated sediments from DMU-2 and CDF Cell 1.
Mobilization Activities		
Jun-04	HDPE fusion welding	Prep. Inspect. (6/7/04), Initial Inspection (6/24/04)
June/July 2004	Desanding plant building erection (Area C)	Prep. Inspect. (6/24/04), Initial Inspection (7/12/04)
Jun-04	Diving operations associated with submerged pipeline	Prep. Inspect. (6/18/04), Initial Inspection (6/23/04)
Jun-04	Submerged pipeline installation	Prep. Inspect. (6/18/04), Initial Inspection (7/27/04)
Jul-04	Utility installation	Prep. Inspect. (7/21/04), Initial Inspection (8/11/04)
Jul-04	Offloading and assembling marine equipment	Prep. Inspect. (7/29/04), Initial Inspection (7/30/04)
Aug-04	Placement and tie-down of debris removal platform in DMU-2	Prep. Inspect. (8/10/04), Initial Inspection (8/12/04)
Aug-04	Sheet pile, traveling cable, silt skirt installation	Prep. Inspect. (8/10/04), Initial Inspection (8/17/04)
Aug-04	Booster pump placement and assembly	Prep. Inspect. (8/6/04), Initial Inspection (8/12/04 and 10/12/04)
Aug-04	Dredge piping connect at bulkhead	Prep. Inspect. (6/18/04), Initial Inspection (8/04/04)

Attachment A
Summary of 2004 Activities
New Bedford Harbor Superfund Project

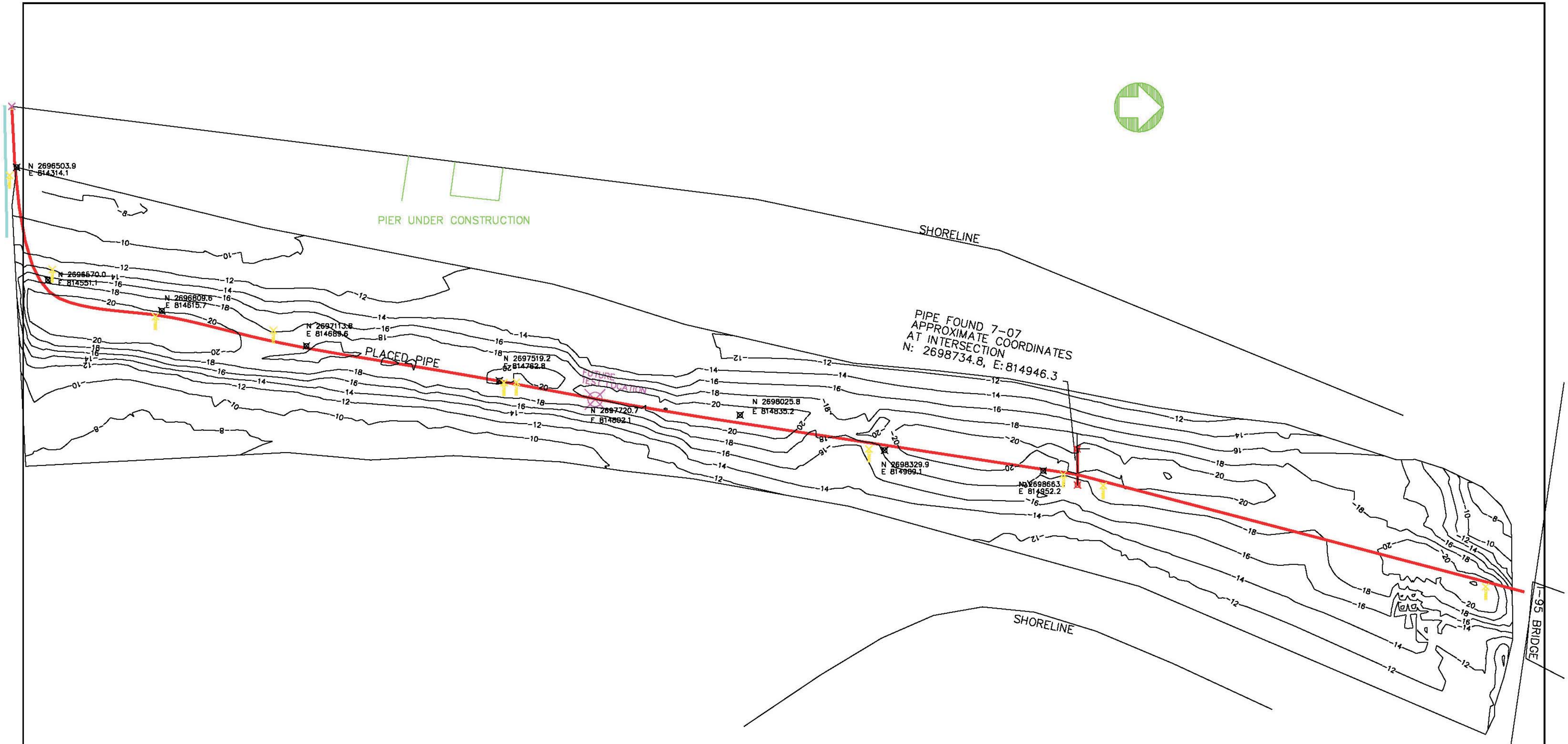
Date	Activity	Summary
Dredging and Associated Activities		
9/1/2004	Initiated CDF Dredging	This included the start-up of activities for the following supporting operations: **Desanding operations** (prep. Inspect. [8/13/04] and initial inspect. [9/16/04]); **Dewatering operations** (prep. inspect. [8/13/04] and initial inspect. [10/05/04]); and **waste water treatment operations** [8/19/04] and initial inspect. [10/05/04].
8/31/2004	Initiate DMU-2 debris removal activities	Debris removal activities were initiated on this date with an excavator placed on a barge.
9/7/2004	Completed DMU-2 debris removal activities	Due to concerns with regard to lack of vertical control and with turbidity generated by debris removal activities, these activities were ceased.
9/8/2004	Initiated DMU-2 Dredging	The preparatory inspection for the dredging operations was conducted on 8/25/04.
9/8/2004	Suspended DMU-2 Activities due to hydrogen sulfide gas at desanding plant	Elevated H_2S levels were detected at the desanding plant (Area C) that warranted ceasing DMU-2 dredging operations until process controls were identified and implemented.
9/22/2004	Completed CDF Dredging	CDF dredging operations were suspended due to issues with debris in cell and the potential effect on pipeline blockages.
9/22/2004	DMU-2 dredging operations resumed with H_2S controls in place	DMU-2 operations were resumed with the following H_2S controls: ferric sulfate injection at Aerovox (prep inspect. [9/21/04] and initial inspect [10/07/04]; and workers in level B protection in the desanding plant (Area C). In addition, increased health and safety monitoring was conducted.
9/29/2004	Initiate shipment of filter cake material from Waste Water Treatment Plant (WWTP)	The Waste Management Process was initiated with the Sept. 21, 2004 preparatory meeting.
10/14/2004	Initiated H2S gas removal at the coarse shaker with ventilation hoods	Local exhaust ventilation system installed as secondary engineering control in the event the ferric sulfate system was not reducing hydrogen sulfide levels below IDLH levels.
11/5/2004	Desanding plant operations were conducted in Level D protection	Workers continued with personal and area monitors for hydrogen sulfide concentrations. Emergency air packs were used as well.

Attachment A
Summary of 2004 Activities
New Bedford Harbor Superfund Project

Date	Activity	Summary
Air Monitoring Activities		
	Air Monitoring Plan Submittal	Prep. Inspect. (6/29/04), Initial Inspection (10/18/04)
6/29-30/2004	Test Round of Air Sampling	Test samples (2) collected to prove low flow sampling and analytical methods were equal to high flow methodology used in previous work.
9/8-9/204	1st Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis.
9/13-14/2004	2nd Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis.
9/22-23/2004	3rd Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis.
9/27-28/2004	4th Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis.
10/18-19/2004	5th Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis.
11/4-5/2004	6th Round of Air Sampling	Twelve PUF with quartz filter samples collected for analysis. The two lowest samples from both Areas C and D were not collected. Instead those samples were used at new locations identified as Stations 42, 54, 55, and 56 to better determine what impact dredging activities were having on the community.
12/1-2/2004	7th Round of Air Sampling	Post dredging/sediment processing samples to determine background values during inactive season.
Winterization Activities		
11/9/04 - 11/18/04	Winterization	Winterization activities were conducted for the following operations: DMU-2; Aerovox ferric sulfide treatment system; Booster pump; docks at Area D; DDA storage; CDF ponds; desanding building (Area C); and dewatering plant (Area D).

ATTACHMENT B

Revised Process Flow Diagrams and As-Builts



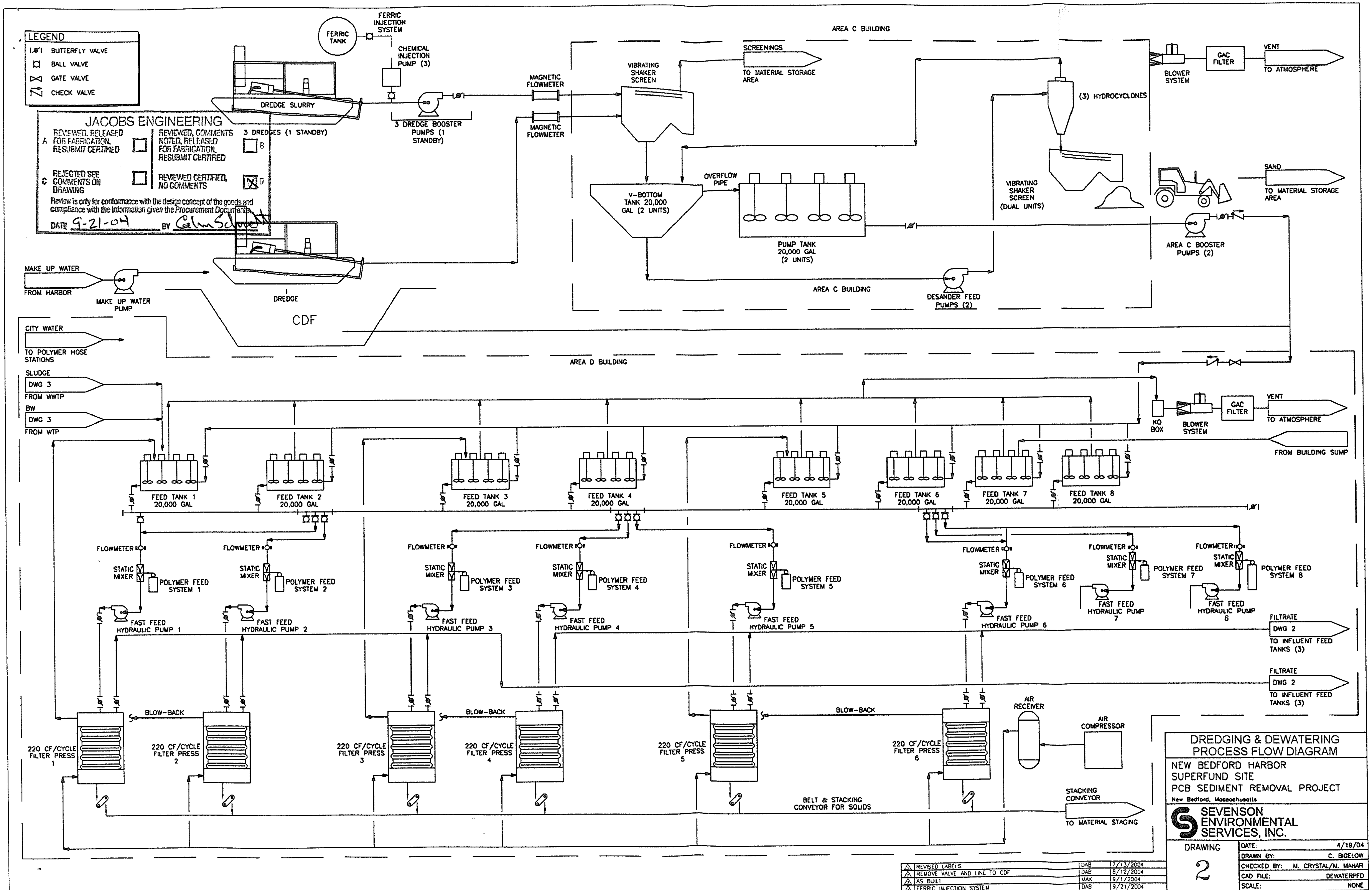
PIPE LOCATION & BATHYMETRIC SURVEY THROUGH 07/08/04

NEW BEDFORD HARBOR
SUPERFUND SITE
PCB SEDIMENT REMOVAL PROJECT
New Bedford, Massachusetts

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 12	
DATE:	7/08/04
DRAWN BY:	D. Burger
CHECKED BY:	M. Crystal
CAD FILE:	0708 surface
SCALE:	1"=100'

X = PIPELINE BUOY MARKER LOCATIONS



△	REVISED LABELS	DAB	7/13/2004
△	REMOVE VALVE AND LINE TO CDF	DAB	8/12/2004
△	AS BUILT	MAK	9/1/2004
△	FERRIC INJECTION SYSTEM	DAB	9/21/2004

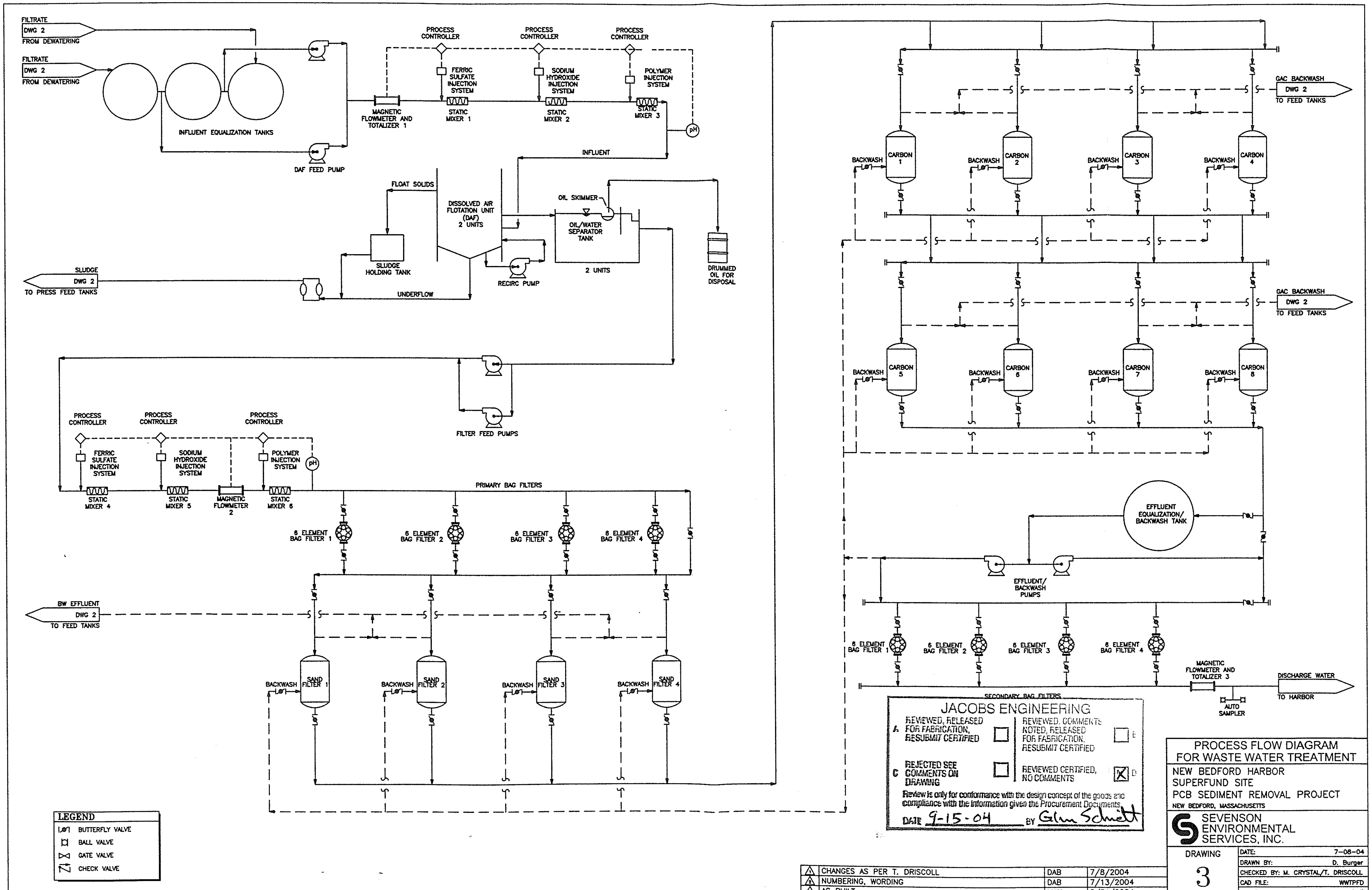
DREDGING & DEWATERING PROCESS FLOW DIAGRAM

NEW BEDFORD HARBOR SUPERFUND SITE
PCB SEDIMENT REMOVAL PROJECT
New Bedford, Massachusetts

SEVENSON ENVIRONMENTAL SERVICES, INC.

DRAWING 2

DATE:	4/19/04
DRAWN BY:	C. BIGELOW
CHECKED BY:	M. CRYSTAL/M. MAHAR
CAD FILE:	DEWATERPFD
SCALE:	NONE



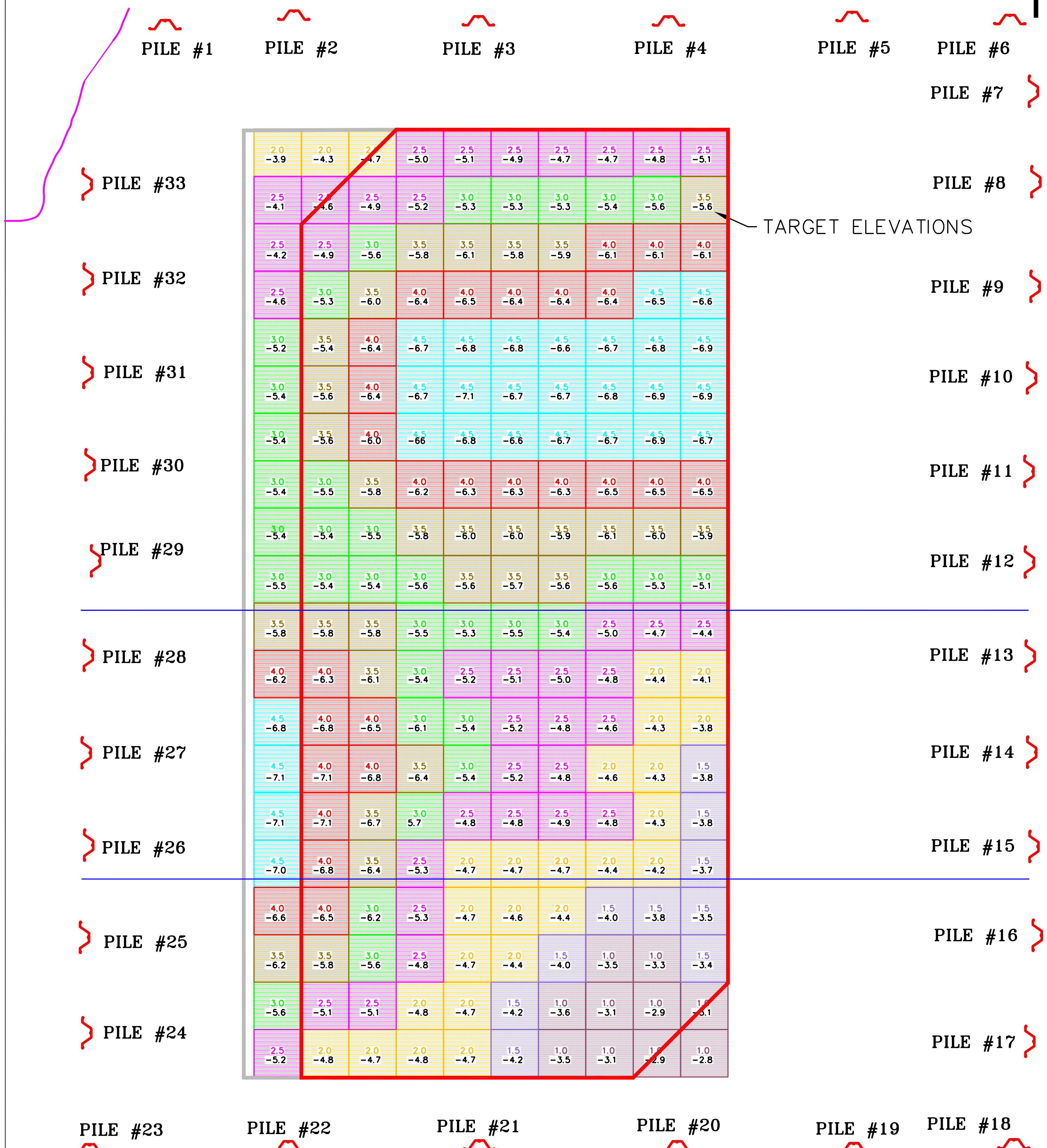
FILTRATE
DWG 2
FROM DEWATERING
FILTRATE
DWG 2
FROM DEWATERING
INFLUENT EQUALIZATION TANKS
DAF FEED PUMP
MAGNETIC FLOWMETER AND TOTALIZER 1
PROCESS CONTROLLER
FERRIC SULFATE INJECTION SYSTEM
STATIC MIXER 1
PROCESS CONTROLLER
SODIUM HYDROXIDE INJECTION SYSTEM
STATIC MIXER 2
PROCESS CONTROLLER
POLYMER INJECTION SYSTEM
STATIC MIXER 3
pH
INFLUENT
FLOAT SOLIDS
DISSOLVED AIR FLOTATION UNIT (DAF) 2 UNITS
OIL SKIMMER
OIL/WATER SEPARATOR TANK
2 UNITS
DRUMMED OIL FOR DISPOSAL
SLUDGE HOLDING TANK
RECIRC PUMP
UNDERFLOW
SLUDGE
DWG 2
TO PRESS FEED TANKS
FILTER FEED PUMPS
PROCESS CONTROLLER
FERRIC SULFATE INJECTION SYSTEM
STATIC MIXER 4
PROCESS CONTROLLER
SODIUM HYDROXIDE INJECTION SYSTEM
STATIC MIXER 5
MAGNETIC FLOWMETER 2
PROCESS CONTROLLER
POLYMER INJECTION SYSTEM
STATIC MIXER 6
pH
PRIMARY BAG FILTERS
6 ELEMENT BAG FILTER 1
6 ELEMENT BAG FILTER 2
6 ELEMENT BAG FILTER 3
6 ELEMENT BAG FILTER 4
BW EFFLUENT
DWG 2
TO FEED TANKS
BACKWASH
SAND FILTER 1
BACKWASH
SAND FILTER 2
BACKWASH
SAND FILTER 3
BACKWASH
SAND FILTER 4
GAC BACKWASH
DWG 2
TO FEED TANKS
BACKWASH
CARBON 1
BACKWASH
CARBON 2
BACKWASH
CARBON 3
BACKWASH
CARBON 4
GAC BACKWASH
DWG 2
TO FEED TANKS
BACKWASH
CARBON 5
BACKWASH
CARBON 6
BACKWASH
CARBON 7
BACKWASH
CARBON 8
EFFLUENT EQUALIZATION/ BACKWASH TANK
EFFLUENT/ BACKWASH PUMPS
6 ELEMENT BAG FILTER 1
6 ELEMENT BAG FILTER 2
6 ELEMENT BAG FILTER 3
6 ELEMENT BAG FILTER 4
SECONDARY BAG FILTERS
MAGNETIC FLOWMETER AND TOTALIZER 3
AUTO SAMPLER
DISCHARGE WATER
TO HARBOR
LEGEND
BUTTERFLY VALVE
BALL VALVE
GATE VALVE
CHECK VALVE
JACOBS ENGINEERING
A REVIEWED, RELEASED FOR FABRICATION, RESUBMIT CERTIFIED
REVIEWED, COMMENTS NOTED, RELEASED FOR FABRICATION, RESUBMIT CERTIFIED B
C REJECTED SEE COMMENTS ON DRAWING
REVIEWED CERTIFIED, NO COMMENTS D
Review is only for conformance with the design concept of the goods and compliance with the information given the Procurement Documents.
DATE 9-15-04 BY Glen Schmitt
PROCESS FLOW DIAGRAM FOR WASTE WATER TREATMENT
NEW BEDFORD HARBOR SUPERFUND SITE
PCB SEDIMENT REMOVAL PROJECT
NEW BEDFORD, MASSACHUSETTS
SEVENSON ENVIRONMENTAL SERVICES, INC.
DRAWING
3
DATE: 7-08-04
DRAWN BY: D. Burger
CHECKED BY: M. CRYSTAL/T. DRISCOLL
CAD FILE: WWTPFD
SCALE: NONE
CHANGES AS PER T. DRISCOLL DAB 7/8/2004
NUMBERING, WORDING DAB 7/13/2004
AS BUILT MAK 8/31/2004

ATTACHMENT C

Dredge Progress Figures

TARGETED SEDIMENT FOR REMOVAL

(AUGUST 25 SES/MERIDIAN SURVEY VS FINAL GRADES)



LEGEND

- 4.5' – 5.0' OF SEDIMENT TO BE REMOVED
- 4.0' – 4.5' OF SEDIMENT TO BE REMOVED
- 3.5' – 4.0' OF SEDIMENT TO BE REMOVED
- 3.0' – 3.5' OF SEDIMENT TO BE REMOVED
- 2.5' – 3.0' OF SEDIMENT TO BE REMOVED
- 2.0' – 2.5' OF SEDIMENT TO BE REMOVED
- 1.5' – 2.0' OF SEDIMENT TO BE REMOVED
- 1.0' – 1.5' OF SEDIMENT TO BE REMOVED
- 0.5' – 1.0' OF SEDIMENT TO BE REMOVED
- 0.0' – 0.5' OF SEDIMENT TO BE REMOVED

SHEET PILE

DMU2 2004

DREDGE TRAVERSE CABLES

SHORELINE

NOTE: SEDIMENT THICKNESS IS BASED ON SES/MERIDIAN SURVEY AND Z-STAR ELEVATIONS.
THE TARGET ELEVATIONS AND THICKNESSES SHOWN ARE AN AVERAGE OF THE Z-STAR ELEVATIONS AND THICKNESSES AT THE GRID INTERSECTIONS.

VOLUME OF SEDIMENT REMAINING

ORIGINAL SURFACE: AUG. 25 SES/MERIDIAN SURVEY

DESIGN SURFACE: Z-STAR ELEVATIONS FROM USACE

CUT (cu yd)	6" OVER DREDGE (cu yd)	NET (cu yd)
13189	2521	15710

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE C-1
DMU2 DREDGE PLAN
DATE: SEP 02, 2004

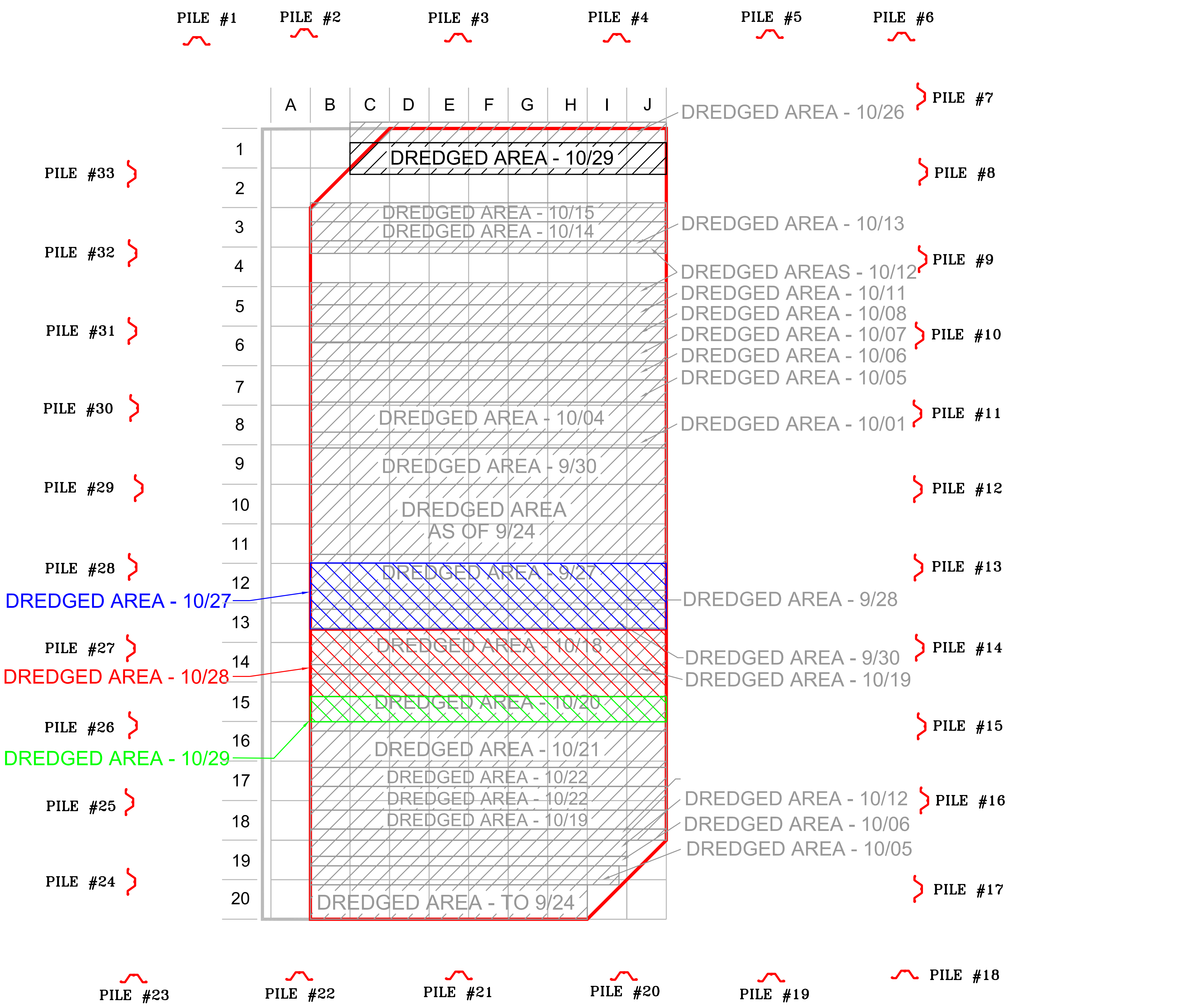


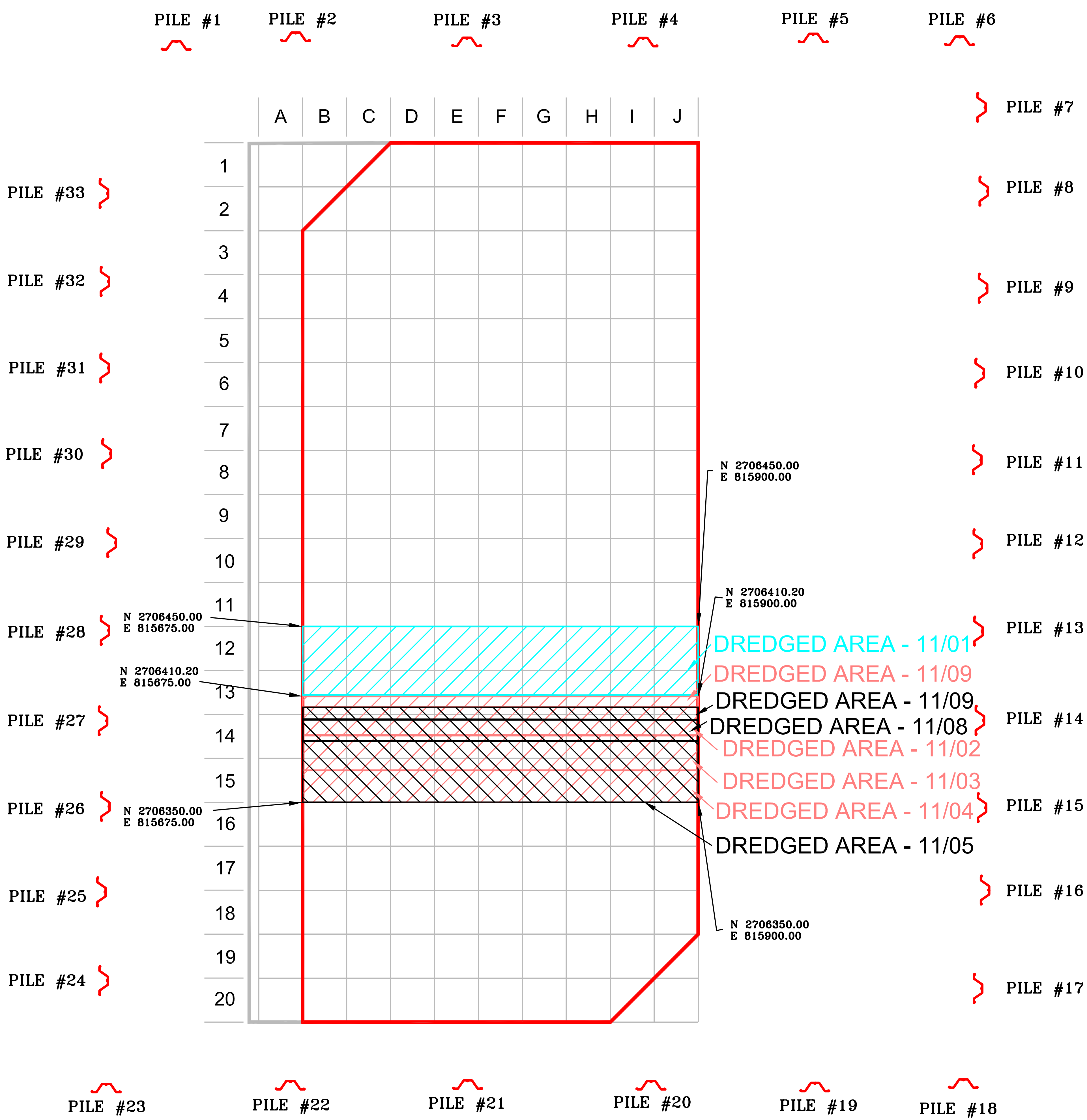
FIGURE C-2

DMU-2 DREDGED AREAS

OCTOBER 29, 2004

NOT TO SCALE

SEVENSON ENVIRONMENTAL SERVICES, INC.



THIS PLAN DEPICTS AREAS DREDGED TO THE DEPTHS SO NOTED AS OF NOVEMBER 9, 2004.

DREDGED AREA TO ZSTAR

DREDGED AREA TO 2' BELOW ZSTAR

DREDGED AREA TO 3' BELOW ZSTAR

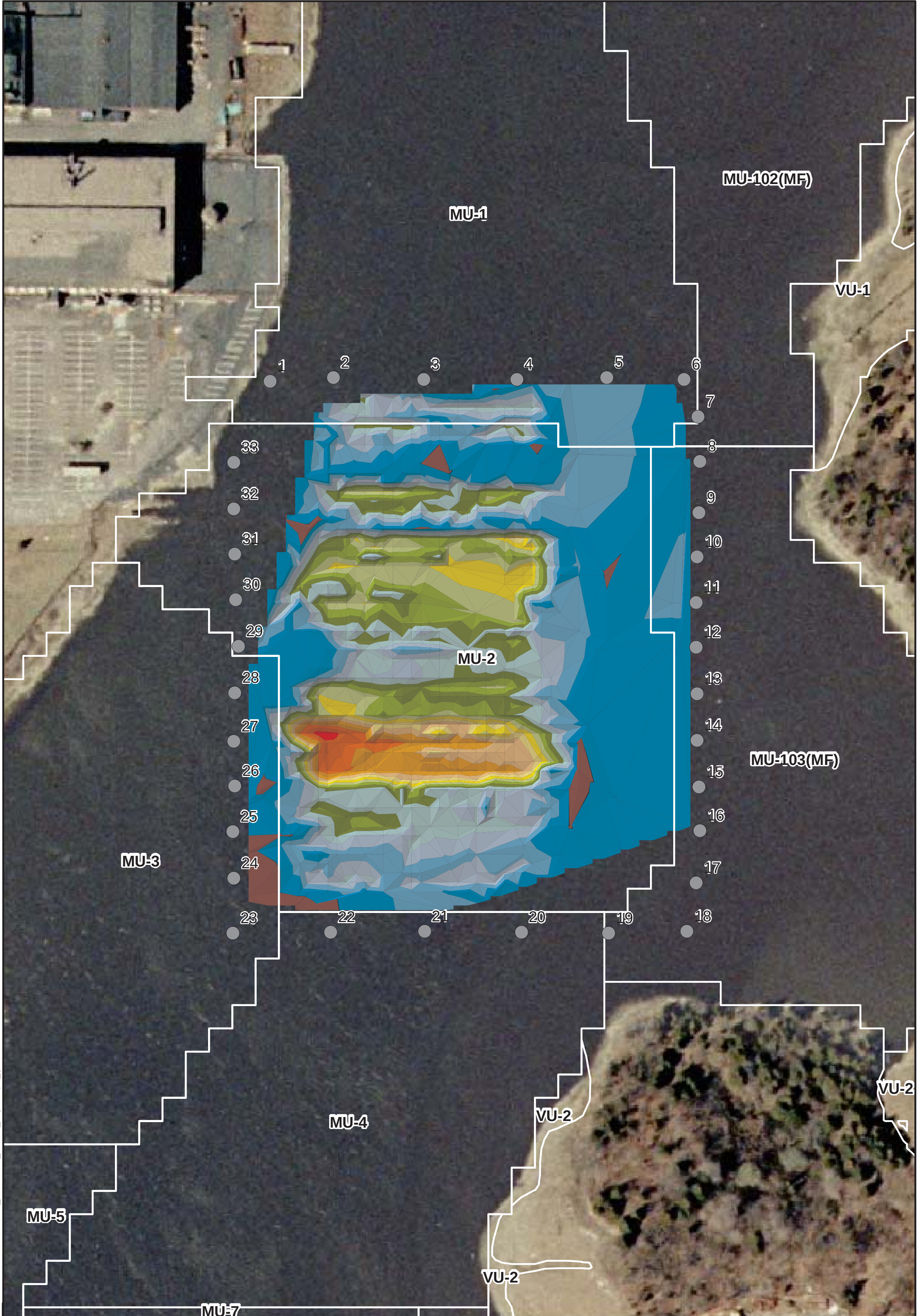
FIGURE C-3

DMU-2 DREDGED AREAS AT OR BELOW Z-STAR TARGET ELEVATIONS

NOVEMBER 09, 2004

NOT TO SCALE

SEVENSON ENVIRONMENTAL SERVICES, INC.



Legend

Dredge Depth vs. 1999 Bathymetric Survey Data Elevation (ft)

- 0 - 0.5
- -0.5 - -0
- -1.0 - -0.5
- -1.5 - -1
- -2.0 - -1.5
- -2.5 - -2
- -3.0 - -2.5
- -3.5 - -3
- -4.0 - -3.5
- -4.5 - -4
- -5.0 - -4.5
- -5.5 - -5
- -6.0 - -5.5
- -6.5 - -6
- -7.0 - -6.5
- -7.5 - -7

N

0 75 150 Feet

1:1,800

JACOBS

Sevenson Environmental Services, Inc.

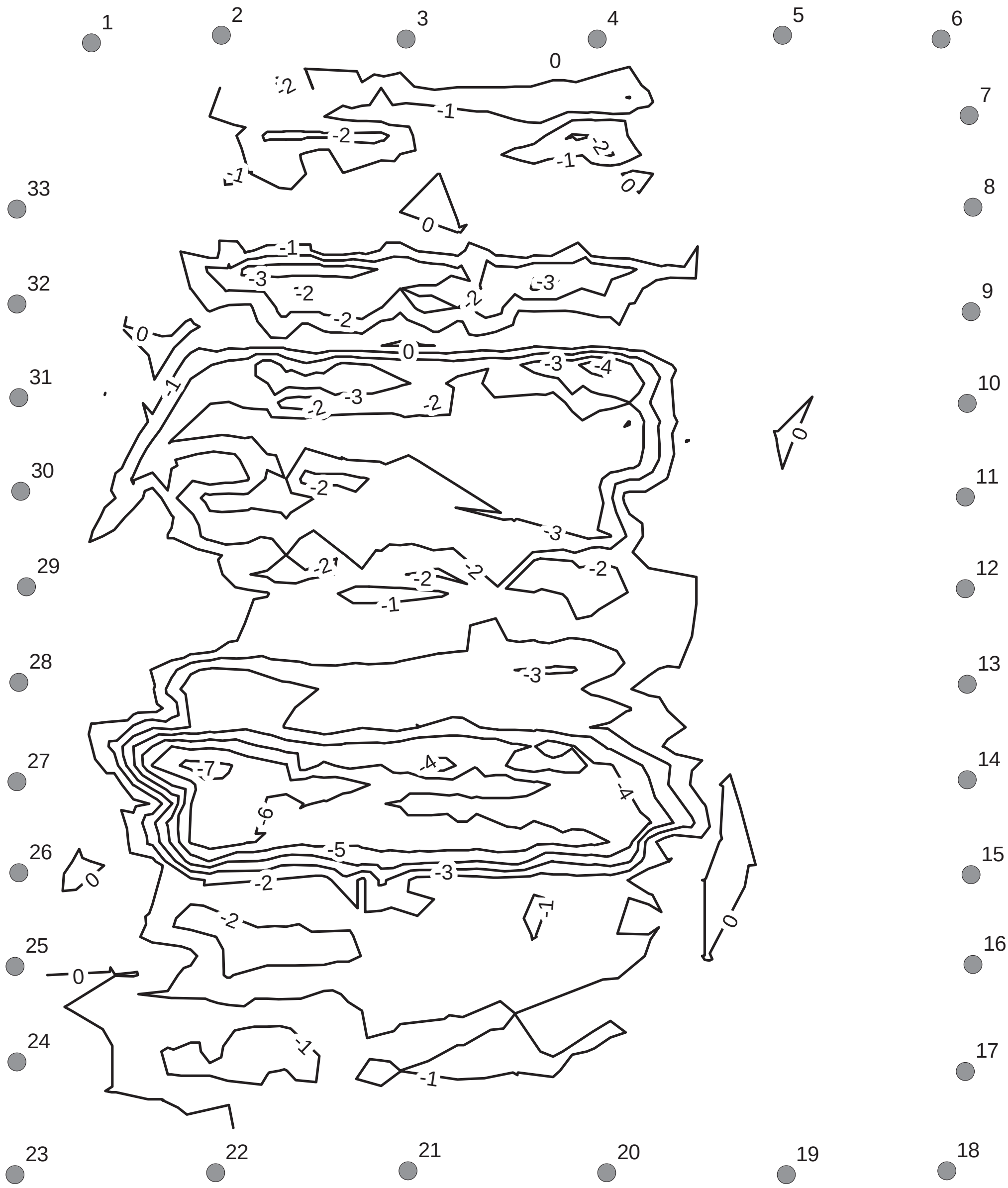
2004 Dredge Area Map

New Bedford Harbor Superfund Site
December 2004

NAME: croberts DATE: 12/17/2004

Figure C-4

Y:\NBHProjects\35BG010103\20041217\ArcGIS\meridian_finalshots_minus_orgbathy4_grid.mxd



Legend

Contours of Dredge Depth vs. 1999 Bathymetric Survey

Sheet Pile Locations

Note: Positive numbers indicate mounding left behind after dredging.
Negative numbers indicate depth of sediment removed.

N

0 50 100 Feet

1:1,200

JACOBS

Sevenson Environmental Services, Inc.

Dredge Depth vs. 1999 Bathymetric Survey Contour

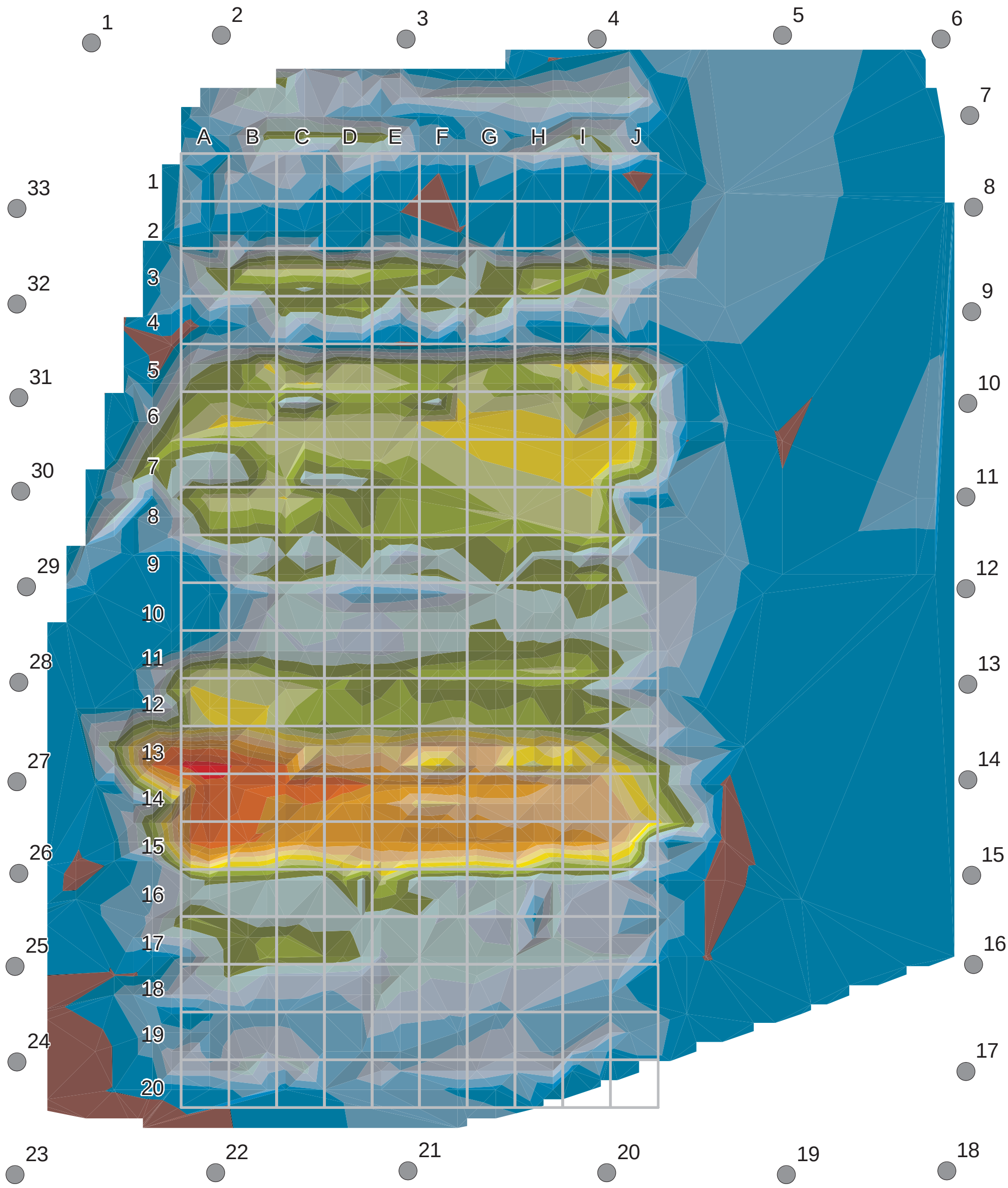
New Bedford Harbor Superfund Site

December 2004

NAME: croberts DATE: 12/17/2004

Figure C-5

Y:\NBH\Projects\35BG010103\20041217\ArcGIS\meridian_finalshots_minus_orgbathy4_contour.mxd



Note: Positive numbers indicate mounding left behind after dredging.
Negative numbers indicate depth of sediment removed.

Legend

Dredge Depth vs. 1999 Bathymetric Survey Data
Elevation (ft)

- 0 - 0.5
- -0.5 - -0
- -1.0 - -0.5
- -1.5 - -1
- -2.0 - -1.5
- -2.5 - -2
- -3.0 - -2.5
- -3.5 - -3
- -4.0 - -3.5
- -4.5 - -4
- -5.0 - -4.5
- -5.5 - -5
- -6.0 - -5.5
- -6.5 - -6
- -7.0 - -6.5
- -7.5 - -7

N

0 50 100 Feet

1:1,200

JACOBS

Sevenson Environmental Services, Inc.

Dredge Depth vs. 1999 Bathymetric Survey 3D View

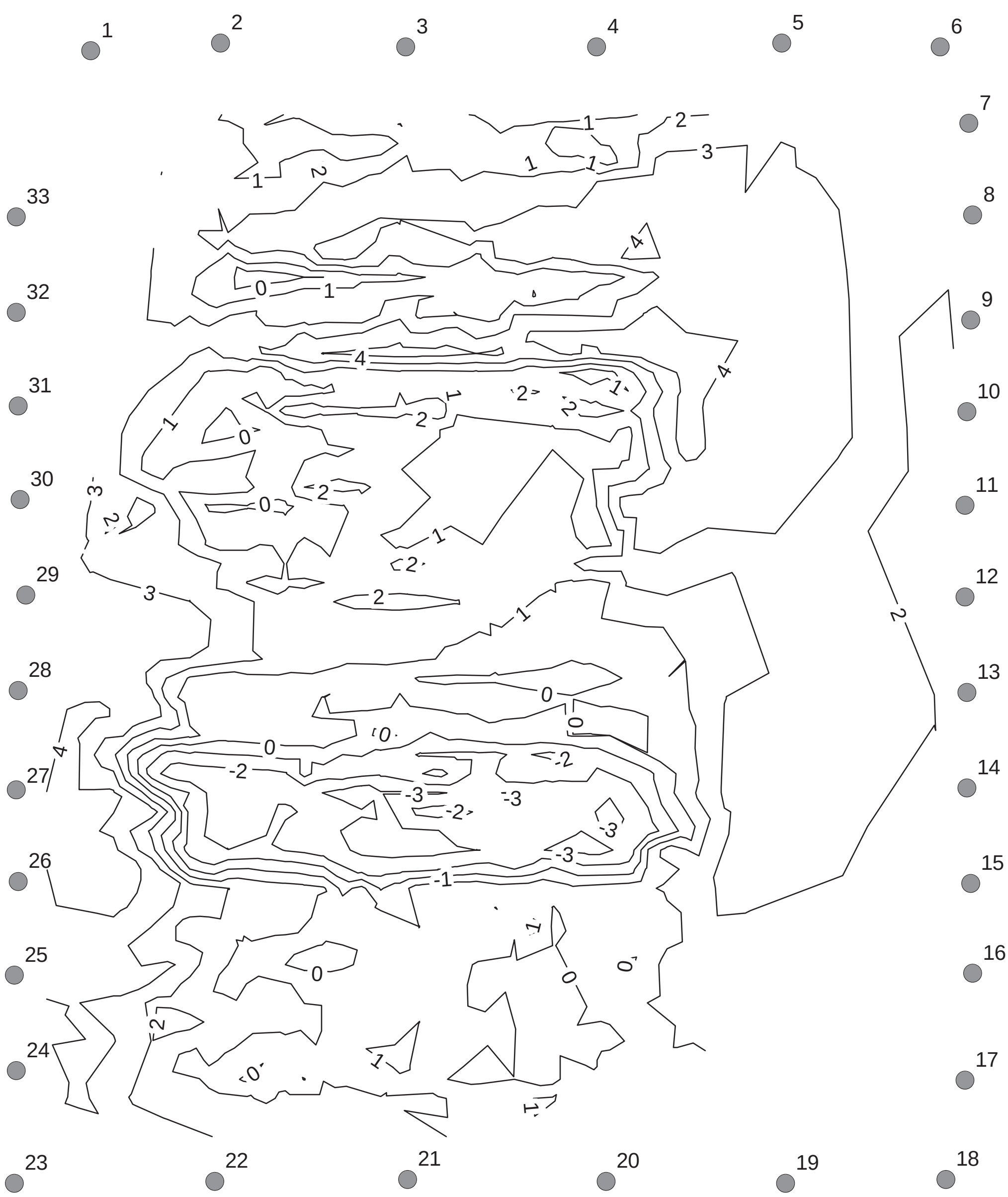
New Bedford Harbor Superfund Site

December 2004

NAME: croberts DATE: 12/17/2004

Figure C-6

Y:\NBH\Projects\35BG010103\20041217\ArcGIS\meridian_finalshots_minus_orgbathy4.mxd



Legend

Contours of Dredge Depth vs. Z* Depth

Sheet Pile Locations

Note: Positive numbers indicate depth of sediment above zstar.
Negative numbers indicate depth of sediment removed below zstar.

N

0 50 100
Feet

1:1,200

JACOBS

Sevenson Environmental Services, Inc.

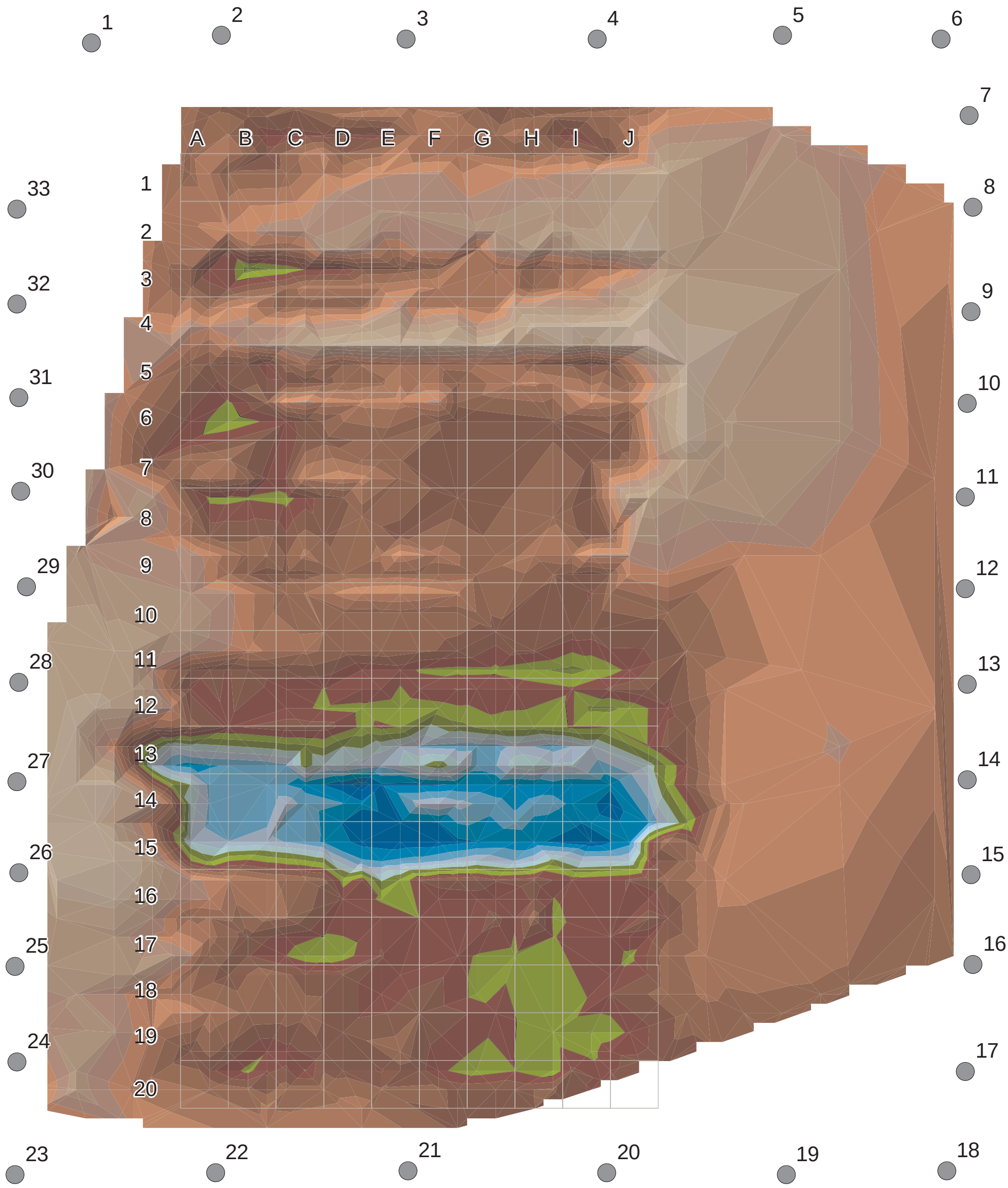
Dredge Depth vs.
Z* Depth Contour

New Bedford Harbor Superfund Site
December 2004

NAME: croberts DATE: 12/17/2004

Figure C-7

Y:\NBH\Projects\35BG010103\20041217\ArcGIS\meridian_finalshots_minus_zstar3_contour_grid.mxd



Note: Positive numbers indicate depth of sediment above zstar.
Negative numbers indicate depth of sediment removed below zstar.

Legend

Dredge Depth vs. Z* Depth Elevation (ft)

- 4.5 - 5
- 4.0 - 4.5
- 3.5 - 4
- 3.0 - 3.5
- 2.5 - 3
- 2.0 - 2.5
- 1.5 - 2
- 1.0 - 1.5
- 0.5 - 1
- 0 - 0.5
- 0
- -0.500 - -0
- -1.0 - -0.5
- -1.5 - -1
- -2.0 - -1.5
- -2.5 - -2
- -3.0 - -2.5
- -3.5 - -3
- -4.0 - -3.5
- Sheet Pile Locations

N

0 50 100 Feet

1:1,200

JACOBS

Sevenson Environmental Services, Inc.

Dredge Depth vs.
Z* Depth 3D View

New Bedford Harbor Superfund Site
December 2004

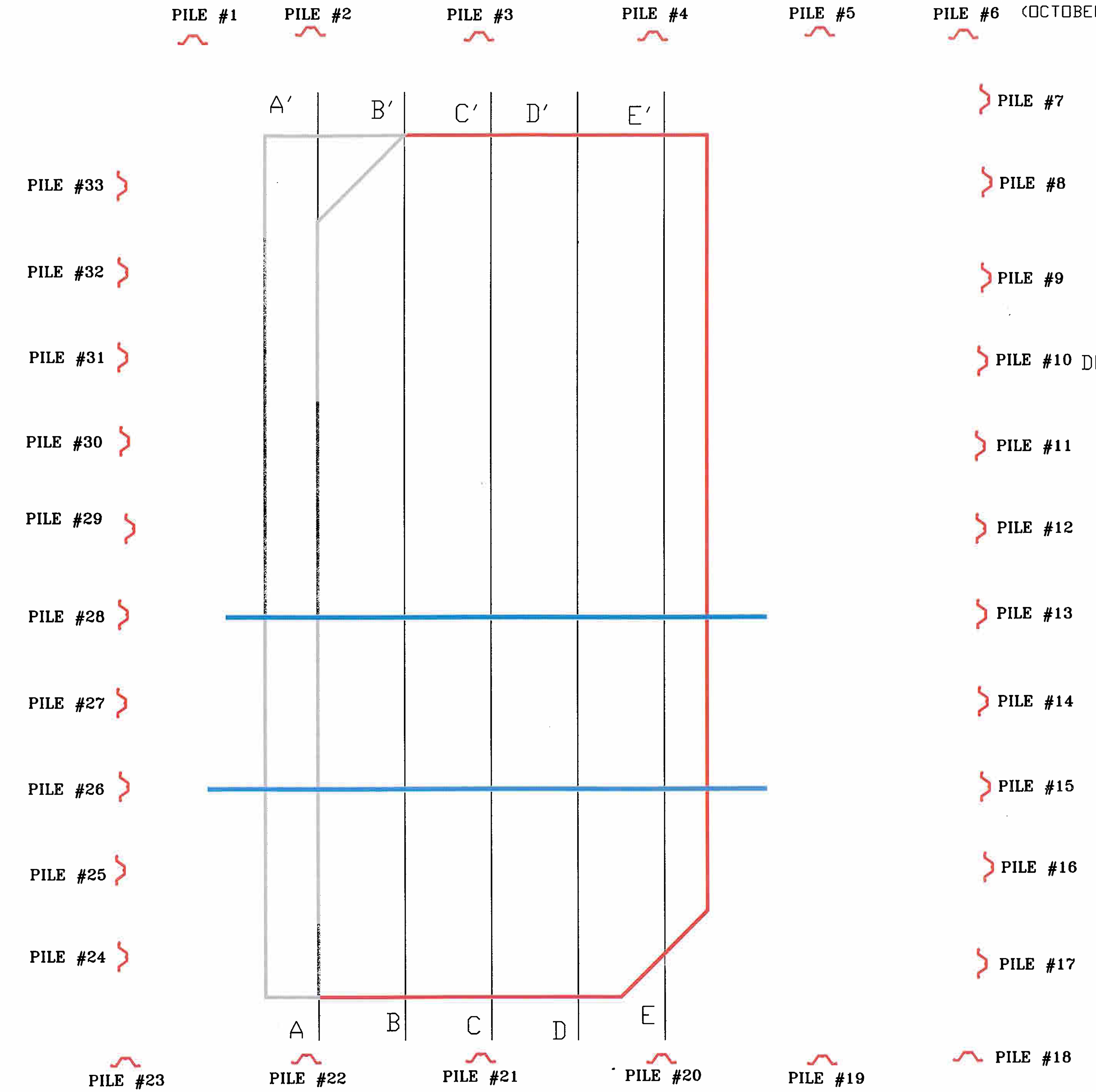
NAME: croberts DATE: 12/17/2004

Figure C-8

Y:\NBH\Projects\35BG0101\03\20041217\ArcGIS\meridian_finalshots_minus_zstar3.mxd

CROSS SECTION LOCATIONS DMU2

(OCTOBER 20-28 SES/MERIDIAN SURVEY VS FINAL GRADES)



LEGEND

SHEET PILE

DMU2 2004-ADDITIONAL AREA

DMU2 2004

DREDGE TO CLEAN ELEVATION AREA

NOTE

ALL ELEVATIONS BASED ON NGVD 1929

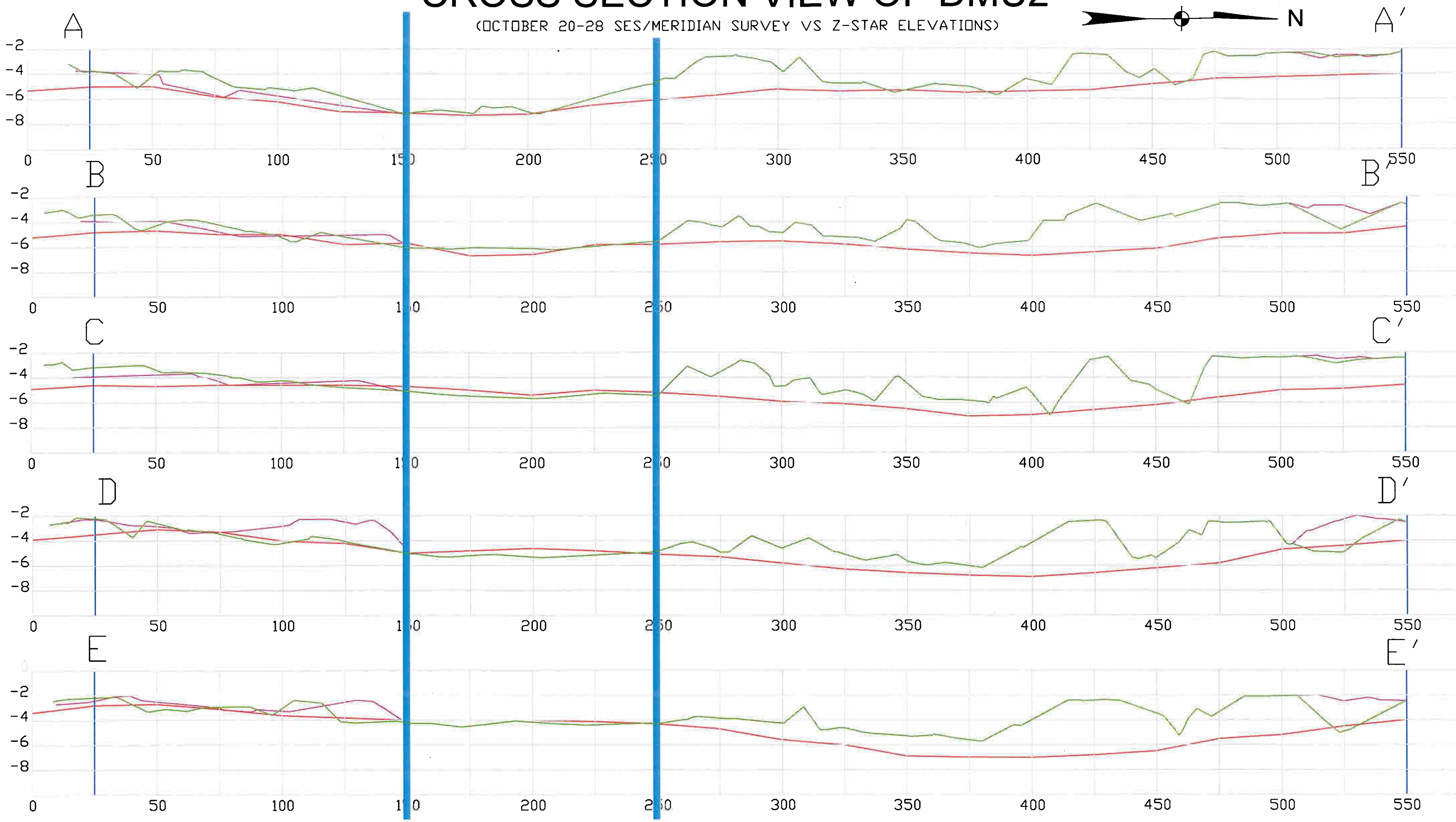
SURVEY DONE USING TOTAL STATION AND ROD WITH PLATE.

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE C-9
DMU2 DREDGE PLAN
DATE: NOV 02, 2004

CROSS SECTION VIEW OF DMU2

(OCTOBER 20-28 SES/MERIDIAN SURVEY VS Z-STAR ELEVATIONS)

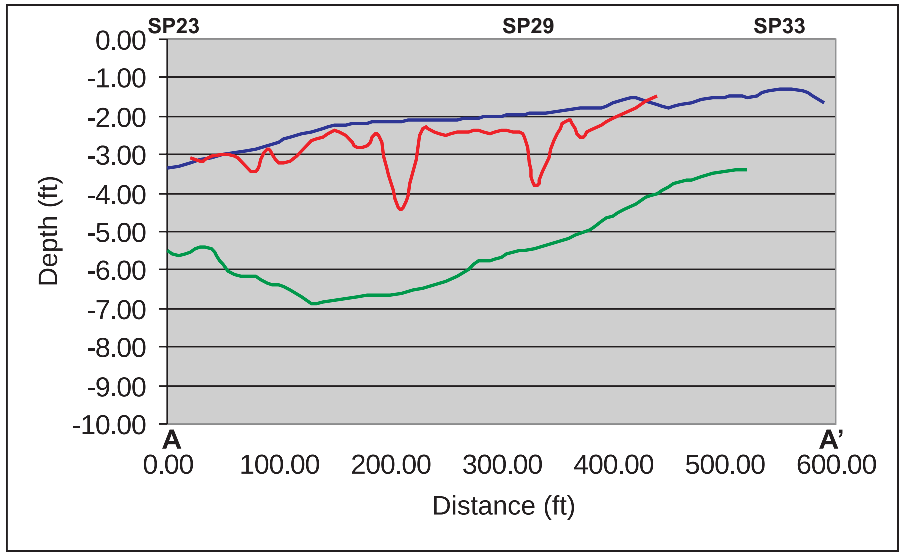


LEGEND

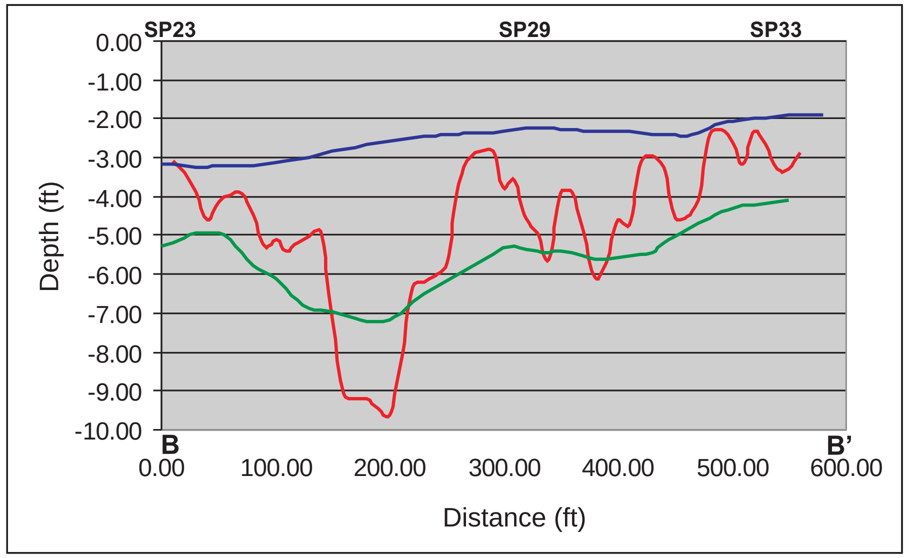
DREDGE TO Z-STAR ELEVATION AREA BORDER
DMU2 2004 NORTH & SOUTH LIMITS
Z-STAR ELEVATIONS
OCTOBER 20-28 MERIDIAN SURFACE
OCTOBER 20 - NOVEMBER 02 MERIDIAN SURFACE

SEVENSON ENVIRONMENTAL SERVICES, INC.

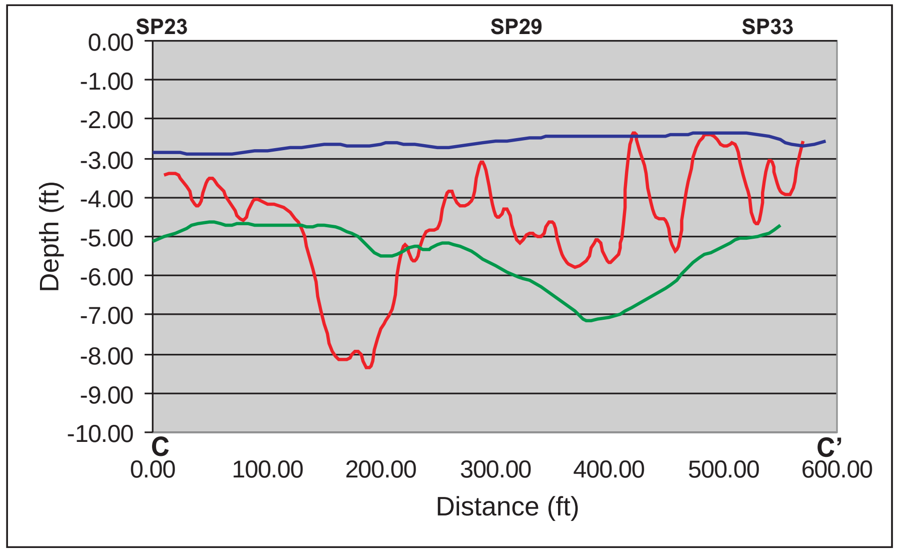
FIGURE C-10
DMU2 DREDGE PLAN
DATE: NOV 02, 2004



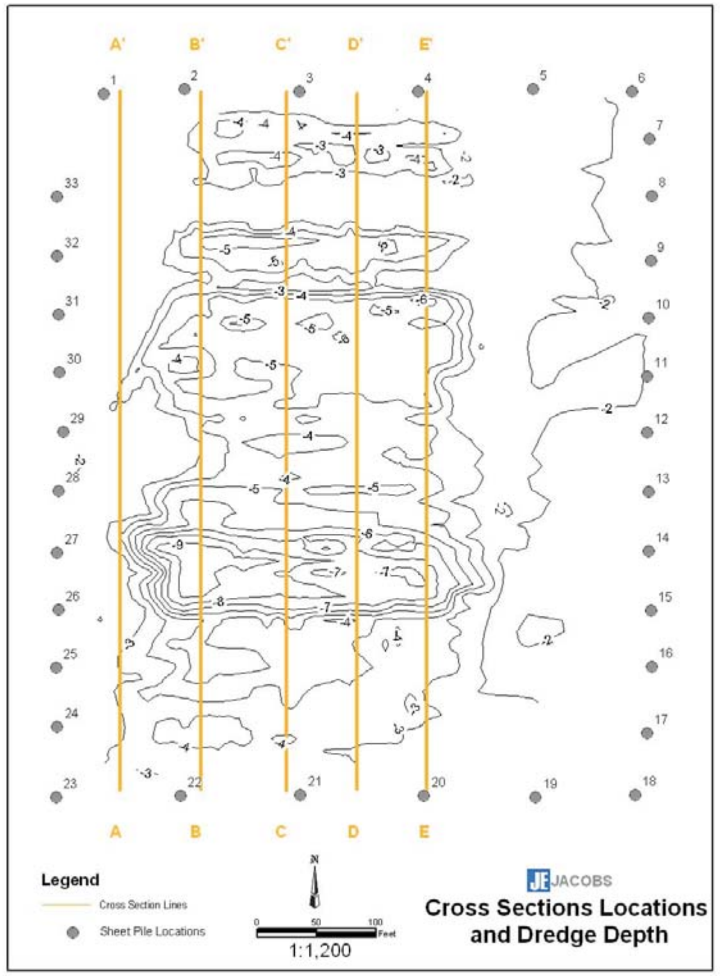
Cross Section A-A'

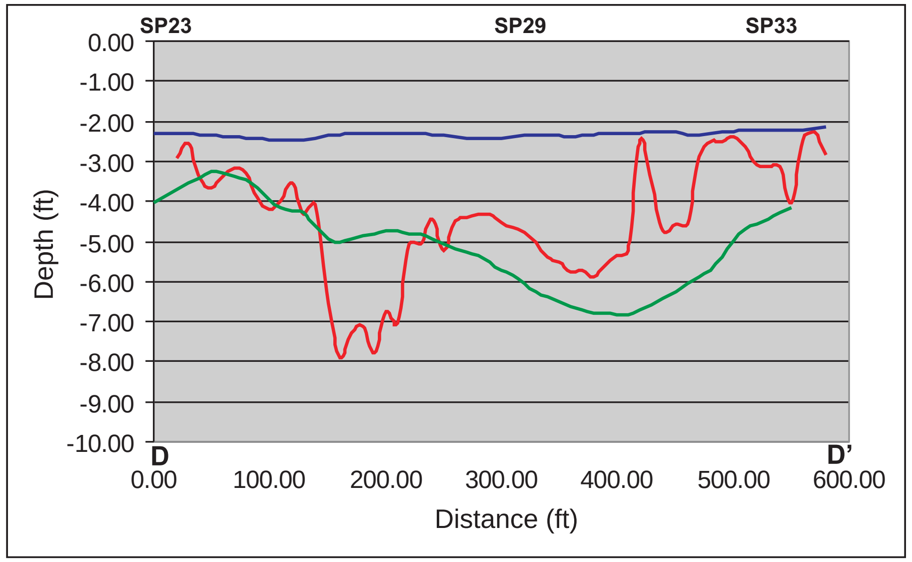


Cross Section B-B'

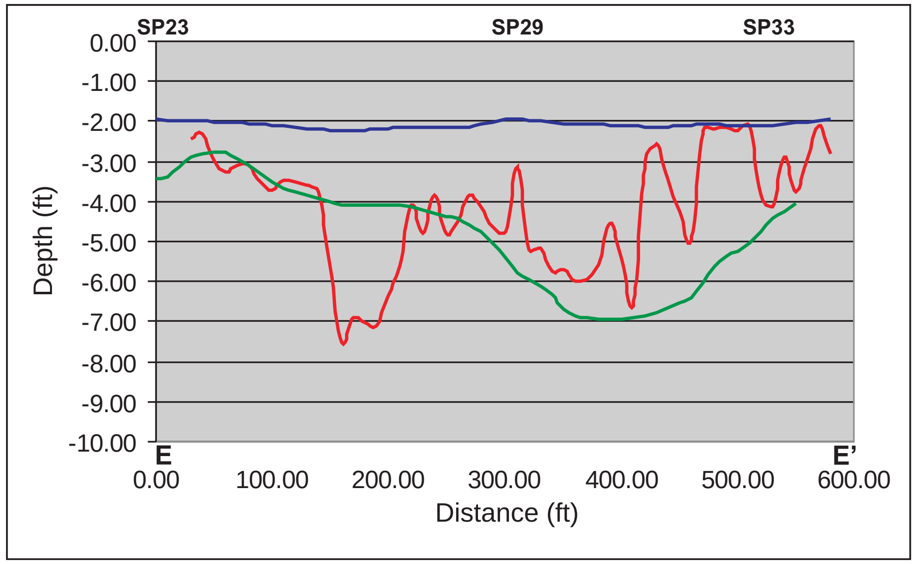


Cross Section C-C'





Cross Section D-D'



Cross Section E-E'

Legend

Pre-Dredge Bathymetry
Post-Dredge Bathymetry
Z* Depth

Note:
SP# = Sheet Pile Location
Depths = MSL

JACOBS

DMU-2 Dredge Area Cross Section Final Dredge Survey 11/12/04

New Bedford Harbor
New Bedford, MA

Y:\NBH\projects\35BG0101\03\20051102\graphics\xsections_dmu2_11x17_3.cdr

Figure C-11

ATTACHMENT D

Hydrogen Sulfide Documents

Attachment D-1
Hydrogen Sulfide Control from Desanding Operations
at New Bedford Harbor Superfund Site
September 10, 2004

Background

On September 8, 2004 at the initiation of dredging operations in DMU-2, significant hydrogen sulfide (H_2S) odors were detected in the Desanding Building. Further analysis with a Multi-Rae "sniffer" near the shaker screen showed H_2S concentrations in air at 400 ppm_v. Other analysis in the building indicated wide variation in levels from less than 1 part per million (ppm) to as high as 185 ppm. A plot of H_2S concentrations recorded on the "sniffer" for the incident is shown in Figure 1.

It is assumed that the hydrogen sulfide in DMU-2 has been generated by normal biological anaerobic activity in the sediment, though additional industrial sulfate/sulfide sources may have also contributed.

Prior to this date, no sulfide samples have been taken of in-situ sediment, or in the dredge discharge. Samples of DMU-2 sediment were collected on September 9 by Sevenson and sent to Severn-Trent's laboratory in Vermont by Jacobs, for total and reactive sulfides. Total cyanides were also requested by Sevenson if sufficient sample volume were available.

The purpose of this memo is to identify possible full-scale solutions to resolve the hydrogen sulfide problem, to develop a bench-scale testing program to evaluate solutions, and to outline the basics of the final installation.

Possible Solutions

Conventional solutions to hydrogen sulfide problems involve one or more of the following approaches:

1. Oxidation of sulfide to sulfate or elemental sulfur, using chemical oxidants such as potassium permanganate, hydrogen peroxide, ozone, chlorine dioxide, and sodium or calcium hypochlorite.
2. pH adjustment of the flow to 8.5 to 9 to reduce the amount of H_2S in the flow;

3. Addition of an iron salt to eliminate hydrogen sulfide by precipitating iron sulfide.
4. An air-release system at the entrance to Building C prior to the shaker screens to vent gases to an enclosed air treatment system.
5. A targeted air handling system over the shaker screens, hydrocyclones and v-bottom tanks to provide additional removal of gases liberated in that area.

These alternatives were considered for application at the New Bedford Harbor Superfund Site as described in the next section.

1. Oxidation of Sulfides

Under this option, a strong oxidizing agent would be added to the flow at the Dredge Booster Pump Station. Strong oxidizing agents break apart the hydrogen sulfide molecule, creating either elemental sulfur or sulfates.

Common **chlorine** compounds (gaseous chlorine and hypochlorites) were rejected because of the formation of trihalomethanes (including chloroform) that would result from chlorinating the organic compounds in the sediment.

Chlorine dioxide does not form trihalomethanes, but must be generated on-site in a special reactor which could not be cost-effective, given the temporary nature of the project. Ozone was rejected for the same reason.

Key concerns of the remaining oxidants (potassium permanganate and hydrogen peroxide) are reaction time and process control. The total reaction time from the Dredge Booster Pump Station to Building C is 5 to 8 minutes. Most studies of oxidants and hydrogen sulfide have suggested this to be a minimum reaction time, <u>on water</u>.

Recommendation. It is a strong possibility that the addition of oxidants to a sediment slurry would require significantly longer reaction time to oxidize all hydrogen sulfide. Therefore, the oxidation option is rejected.

2. pH Adjustment

Under this option, the dredged slurry would be treated with an alkali to raise the pH of the dredged solution. Hydrogen sulfide gas (H_2S) exists in equilibrium with its dissociated ions as follows in Equation 1:

$$(1) \qquad H_2S \leftrightarrow HS^- + H^+$$

The relative percentage of H_2S gas versus HS^- at differing pH values is shown in Table 1.

Table 1
Relationship of Hydrogen Sulfide Gas at Varying pH Values

pH	H_2S, %	HS^-, %
4.0	99.9%	0.1%
5.0	98.9%	1.1%
6.0	90.1	9.9%
7.0	47.7%	52.3%
7.5	22.5%	77.5%
8.0	8.3%	91.7%
8.5	2.8%	97.2%
9.0	0.9%	99.1%

An operating pH of 8.5 to 9.0 would typically be the design control factor.

Method of Control. While a number of alkalis can be used to adjust pH (quicklime, hydrated lime, soda ash, and caustic), caustic is preferable due to ease of use, basicity, and lack of solids added to the sediment.

It has been assumed that caustic would be added at the Dredge Booster Pump Station near Manomet Street. At a velocity 6 to 10 feet-per-second in each pipeline, and a distance of 2,500 feet, it is assumed that sufficient turbulence and time would be provided to achieve complete mixing of caustic and the sediment. pH control would be achieved by varying caustic addition with the Dredge Booster Pump rates.

Advantages. A major theoretical advantage of the pH control option is that the concentration of hydrogen sulfide may vary significantly without significant adjustment of the caustic feed rate.

Disadvantages. pH control would be extremely difficult on the sediment lines: the heavy solids in the lines will “blind” and/or damage the controllers, making even reading pH difficult, with control of the process difficult-to-impossible to predict.

Underdosing of caustic will result in result in continued problems with hydrogen sulfide. Overdosing may cause large pH spikes which will adversely affect downstream dewatering and water treatment processes.

Perhaps more significant, the pH may drop over time downstream in the Agitated Mix Tanks in the Desanding Building, in the Agitated Mix Tanks in Building D, or in the Influent Equalization Tanks in the Water Treatment Area.

In case of such a pH drop, Equation 1 would shift back towards formation of hydrogen sulfide, effectively just relocating the hydrogen sulfide problem to Building D.

Recommendation. pH adjustment alone (without another method) is rejected as the primary method for hydrogen sulfide control.

3. Addition of an Iron Salt

The addition of an iron salt such as ferric chloride or ferric sulfate can be used to control hydrogen sulfide by precipitating ferric sulfide according to the general equation shown below in Equation 2:

$$(2) \qquad Fe^{+3} + H_2S \rightarrow FeS\downarrow + H^+$$

Method of Control. Ferric sulfate would be added by chemical metering pump to the inlet of the Dredge Booster Pumps to facilitate mixing of ferric and the sediment. In practical applications, a 10:1 ratio of ferric: sulfide dosage has been found to be necessary. Samples of the sediment will be analyzed to determine the necessary ferric dosage, and to determine if this dosage is feasible.

Once a ferric dosage is determined, control of the process at the Dredge Booster Pumps would be manual, paced off flow. The operator would adjust the ferric dosage as he adjusts the Dredge Pump output, by adjusting the stroke length of the chemical feed pumps. The ferric dosage would be set up for some overdose, as the alkaline nature of the sediment (pH = 7.5 to 8.5) would tend to buffer such overdoses and keep sediment pH values in the neutral range.

Advantages. The reaction rate in Equation 2 is essentially instantaneous. Therefore, the 5 to 8 minute detention time in the pipeline should be sufficient. Hydrogen sulfide is permanently destroyed, and therefore will not reappear downstream of the Desanding Building. Current sediment sample pH values are alkaline: in the range of 7.5 to 8.5. Therefore, overdosing should not present a serious pH problem.

Disadvantages. The reaction in Equation 2 is stoichiometric (the amount of iron to be added depends upon the amount of sulfide present), and does reduce pH somewhat, depending upon the amount of iron added. If the hydrogen sulfide level is high, ferric dosages will also be high.

Recommendation. The addition of ferric salt should be evaluated further, depending upon the concentration of sulfide found in the sediment. Low pH values resulting from high ferric doses may be adjusted by the addition of caustic.

4. Addition of an Air Release Valve/Chamber

In addition to chemical treatment, a second engineering control option would be the future addition of air release valves or chambers near the inlet to the shaker screens within the Desanding Building.

The air-release valves would vent remaining gases in the pipelines entering the Desanding Building, first to a sealed "knockout" tank or pot to remove liquid sludge or water. A blower would remove gases and discharge to activated carbon or to a chemical scrubber. Sludge and water would be pumped to the v-bottom tanks.

5. Addition of Targeted Ventilation System

A targeted ventilation system designed to remove air from around the shaker screens, hydrocyclones, and v-bottom tanks could be implemented. Vent hoods would be constructed over the shaker screens and mounted on the screen frame.

Separate dedicated blowers, located adjacent to the Booster Pump Station outside the Desanding Building, would operate continuously and pull a large amount of air off the shaker screen area and discharge to activated carbon, either the existing system or a new one.

Attachment D-1
Hydrogen Sulfide Control from Desanding Operations
at New Bedford Harbor Superfund Site
September 10, 2004

Pilot Program

The following program was developed to demonstrate the proposed hydrogen sulfide control process:

Control

1. Take pH reading of the sediment sample
2. Place a 1 to 2-liter sample in a sample jar.
3. Ensure that there is 1 to 2 inches of head space above sample.
4. Cover the jar with a plastic cover to sample the head space.
5. Insert stirrer through small hole in the cover. Insert air sample tube through small hole in the cover for Multi RAE connection.
6. Agitate at maximum speed.
7. Read hydrogen sulfide concentration.

Initial Ferric Dosage

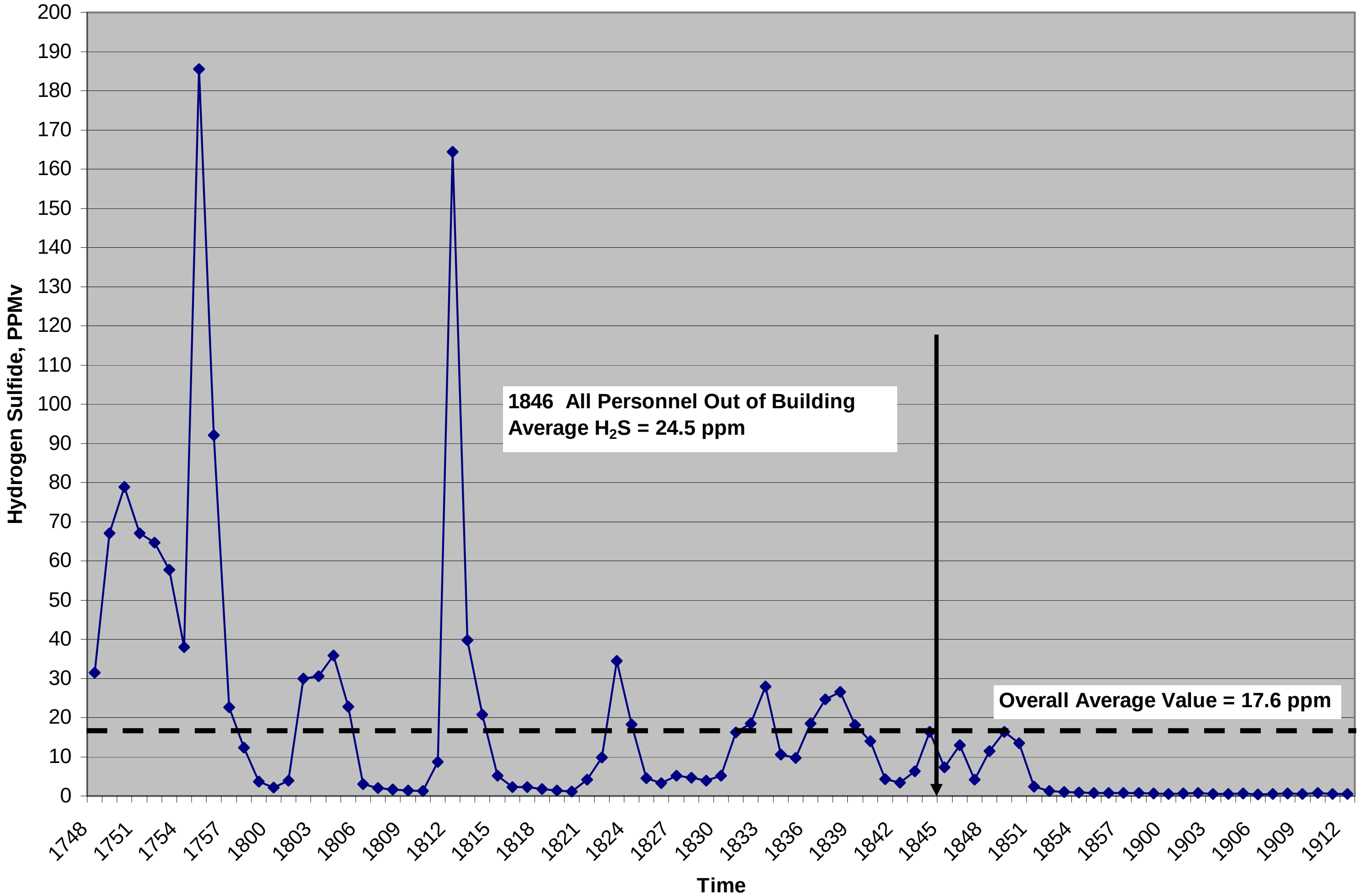
1. Take pH reading of the sediment sample
2. Place a 1 to 2-liter sample in a sample jar.
3. Ensure that there is 1 to 2 inches of head space above sample
4. Add 10:1 ferric: sulfide dosage of ferric sulfate to sample.
5. Cover the jar with a plastic cover to sample the head space.
6. Insert stirrer through small hole in the cover. Insert air sample tube through small hole in the cover for Multi RAE connection.
7. Agitate at maximum speed.
8. Read hydrogen sulfide concentration.
9. If little or no change from control, adjust ferric dosage as outlined below.

Adjusted Ferric Dosage

1. Place new sediment sample in sample jar.
2. Ensure that there is 1 to 2 inches of head space above sample
3. Add 15:1 ferric: sulfide dosage of ferric sulfate to sample.
4. Cover the jar with a plastic cover to sample the head space.
5. Insert stirrer through small hole in the cover. Insert air sample tube through small hole in the cover for Multi RAE connection.
6. Agitate at maximum speed.
7. Read hydrogen sulfide concentration.
8. If little or no change from control, increase ferric dosage on new sample to 20:1.

Attachment D-1

Figure 1
Desanding Building
Hydrogen Sulfide Levels in Air
8 September 2004



Attachment D-2
Hydrogen Sulfide Control Bench Test Data Sheets

Date	Time	H_2S	Sludge	Sea Water	Total Sample Volume	pH	Ferric Sulfate	Ferric Sulfate Dose	rpm	NaOH	Comment
		ppmv	mL	mL	mL		mL	mg/L		mL	
Test 1 (Ferric Sulfate at 31,250 mg/L)											
10-Sep-04	1358	1	250	550	800		0		0		Using Corp H_2S meter
	1400	47 +					0		300		H_2S meter off scale
	1407						50	31,250			Added Ferric (50% Stock)
	1412	0									
	1415	0				~1					H_2S destroyed, headspace at 0 ppm, however the dosage of ferric is excessive
Test 2 (Ferric Sulfate at 3,125 mg/L)											
10-Sep-04	1420	0	200	600	800				0		
	1422	46+				7+			300		H_2S meter off scale
	1436						5	3,125			Added Ferric (50% Stock)
	1441	0				6					H_2S destroyed, headspace at 0 ppm, however the dosage of ferric is excessive
Test 3 (Ferric Sulfate at 278 mg/L)											
10-Sep-04	1455	0	400	500	900	7+			0		Inadvertently added double the sludge volume needed. Decided to do test.
	1456						0.5	278	300		5 minute reaction time
	1501	4									
	1502	0									
	1510										Agitator paddle failed. Will resume testing with Hanks jar tester
Test 4 (Ferric Sulfate at 200 mg/L)											
10-Sep-04	1645	0	200	600	800				0		
	1649	10				7+			slow		Slow ~ 50 rpm fast ~ 300 rpm
	1651	20					6.4	200	slow		
	1652	33				6			fast		Ferric dose of 200 mg/L appears to be to low.

Hydrogen Sulfide Control Bench Test Data Sheets

Date	Time	H_2S ppmv	Sludge mL	Sea Water mL	Total Sample Volume mL	pH	Ferric Sulfate mL	Ferric Sulfate Dose mg/L	rpm	NaOH mL	Comment
Test 5 (Ferric Sulfate at 313 mg/L)											
10-Sep-04	1708	0									Now using Multi-Rae H_2S monitor which has a higher range for H_2S
	1709	126	200	600	800				Fast		
	1711						0.5	313			Injected Ferric Sulfate
	1715	21									
	1716	16									
	1717	16									
	1718	8									
	1723	1				7.1					300 mg/l dosage appears to effectively control H_2S evolution from the slurry
Used test beaker 5 for caustic dose test to determine resulting pH. The results are 0.1 ml NaOH ->pH 7, 0.2 ml NaOH -> pH 8, 0.3 ml NaOH -> pH 11											
Test 6 (Ferric at 294 mg/l and NaOH at 118 mg/L)											
10-Sep-04	1739	35	250	600	850				Fast		
	1740	126									
	1741	126					0.5	294		0.2	
	1742	126									
	1743	126									Injected Ferric Sulfate and NaOH
	1744	17									
	1745	7									
	1746	4									
	1747	2									
	1748	2				8.3					Test appears effective

Attachment D-2
Hydrogen Sulfide Control Bench Test Data Sheets

Date	Time	H_2S	Sludge	Sea Water	Total Sample Volume	pH	Ferric Sulfate	Ferric Sulfate Dose	rpm	NaOH	Comment
		ppmv	mL	mL	mL		mL	mg/L		mL	
Test 7 (NaOH at 125 mg/l and 250 mg/L)											
	1236						0	0			
	1237	298									Added 0.2 ml of NaOH
	1238										
	1239	51								0.2	
	1240	47									
11-Sep-04	1241	46	200	600	800	~8			Fast		
	1254										Added an additional 0.2 ml of NaOH for a total of 0.4 ml of NaOH
	1255	20								0.4	
	1256	9									
	1301	6									
	1315	4				9					Test appears effective
Test 8 (NaOH at 188 mg/L and 313 mg/L)											
	1244						0	0			
	1245	321									
	1246										Added 0.3 ml of NaOH
	1247	63								0.3	
	1249	67									
11-Sep-04	1250	69	200	600	800				Fast		
	1259										Added an additional 0.2 ml of NaOH for a total of 0.5 ml of NaOH
	1300	14								0.5	
	1301	12									
	1303	10				8.5					Test appears effective
	1310	372	Headspace in control beaker								
			We conducted all tests using bucket #3. Sample was collected September 9 from DMU-2 adjacent to where dredging started on September 8, 2004 at a depth of ~ 2 feet into the harbor bottom.								

Notes:

H_2S = hydrogen sulfide
mg/L = milligrams per liter
mL = milliliter
NaOH = sodium hydroxide
pH = negative log hydrogen ion concentration
ppmv = volumetric parts per million
rpm = revolutions per minute
~ = approximately

Attachment D-3
H_2S Process Engineering Monitoring Plan
New Bedford Harbor Superfund Site

The following process variables will be monitored and recorded in order to document and optimize the process control to reduce hydrogen sulfide exposure for worker protection. Air monitoring documentation shall be entered on the attached *H_2S Air Monitoring Results for Process Engineering Evaluation, Dredge Slurry Injection System* form and included in the site daily records.

Ferric sulfate (50% Solution) will be injected at a rate of 300 milligrams per liter (mg/L) to the slurry flow rate as an initial startup dosage*.

Slurry Flow rate (gpm)	1,200	1,400	1,600	1,800	2,000
Ferric Flow rate (gph)	43	50	58	65	72

*The ferric dosage is based on 1 part in-situ sludge to 3 parts water.
gph = gallons per hour
gpm = gallons per minute

The following parameters will be recorded during the ferric system commissioning period and periodically during long-term service.

1. Flow rate from the dredge. Record from the flow meter at Area C and confirm by recording the dredge booster pump suction and discharge pressure along with the pump rpm. The data can be reviewed against the pump curve.
2. Record speed and stroke setting of the ferric metering pumps and rate in gph and dose as mg/L as adjustments are made.
3. Record daily consumption of ferric, starting level and ending level.
4. Periodically observe pH and headspace hydrogen sulfide (H_2S) concentrations from samples collected at: raw water from dredge, the booster pump influent, and post-desanding operations at Area C pump tank
5. Monitor percent solids from dredge slurry by collecting grab samples at the desander influent.
6. Monitor and record H_2S gas concentrations with a multi-gas monitor at the following locations on each desanding unit:
   - Coarse shaker
   - Hydrocyclones and fine shakers
   - V-bottom tanks headspace
   - Pump Tank

   Record time and H_2S concentration (parts per million [ppm]) on the data collection form for these locations at appropriate observational intervals.

Attachment D-4
Hydrogen Sulfide Testing Summary and Proposed Plan
New Bedford Harbor Superfund Site
13 September 2004

Tests Summary

Hydrogen Sulfide (H_2S) control bench scale testing was conducted September 10 and September 11 in accordance with the test outline developed September 10. The testing was conducted at the Area C water treatment plant using existing equipment available on-site. Attachment A provides a summary of the H_2S test method and rationale for selection. The results of the tests indicate ferric sulfate is effective at precipitating H_2S as ferric sulfide which is insoluble. Additional tests were performed with ferric sulfate and sodium hydroxide and sodium hydroxide alone. All tests were demonstrated to be effective at controlling H_2S from off gassing.

Ferric sulfide is recommended for full scale application based on its chemical handling properties. The tests indicate a dose of 300 milligrams per liter (mg/L) of ferric sulfate is required. At 3000 gallons per minute (gpm) of slurry over 12 hours, the resulting ferric sulfate consumption is 1,200 gallons per day. The tests indicate after a 4 to 5 minute reaction time, the H_2S reaction with the slurry is complete and the headspace over the agitated vessel does not evolve H_2S. The reaction may be occurring much faster; however, additional tests would need to be conducted in order to demonstrate a shorter reaction time.

Ferric Sulfate Injection Options

Four potential full scale options were discussed for application considering pro and cons and implementablity. Based on the testing conducted a reaction time of 4 to 5 minutes is required for the H_2S to fully react with the ferric sulfate. In order for the reaction time to proceed the following options were considered: (1) in-line ferric sulfate injection at the dredge booster pump suction lines; (2) in-line ferric sulfate injection at Aerovox adjacent to the harbor; (3) in-line ferric sulfate injection at Area C where the slurry lines from the dredge booster pumps meet land; and (4) set up a reaction tank with a 5 minute retention time at Area C just up stream of the V-bottom tanks.

The following options pros and cons are briefly discussed below:

1. Chemical injection at the booster pump station allows for an adequate reaction time for the ferric to precipitate the H_2S as ferric sulfide. The disadvantage of the booster pump injection is the limited space and agreements that would be necessary with the landowner.
2. Chemical injection at Aerovox back lot provides the reaction time for the ferric and provides much greater access for chemical deliveries as required. Land use agreements are expected to be greatly simplified compared to Manomet Street booster pump station.
3. Chemical injection at Area C feed line allows for chemical handling to be conducted within the NAE property. The disadvantage is the limited reaction time (20 to 30 seconds). Additional jar tests can be conducted with the intent to define a shorter reaction time. The reaction time may be only a few seconds; however, the slurry would not feed though a booster pump and would not be expected to mix with the ferric sulfate as completely. Injection on the dredge booster pump suction line promotes effective dispersion of the ferric sulfate under Options 1 and 2.
4. Install one or potentially two additional agitated mix tanks at Area C have the advantage of keeping any additional equipment at Area C. The mix tank allows for the reaction to proceed and provides a headspace over the slurry that can be contained and monitored real-time to demonstrate the process effectiveness. A vapor recovery treatment system would be recommended for the reaction tanks. The vapor recovery system would vent to a carbon treatment system. The disadvantage is the additional capital required for the tanks and associated pumps to transfer the sludge to the V-bottom tanks. This option would require a longer time to implement.

Option 2 is recommended for implementation based on the discussion above.

Jar test indicate the H_2S levels should be less than 4 parts per million (ppm) localized to the point of release at the course shaker screens over the V-bottom tanks. Spot ventilation is recommended in order to manage any potential H_2S source at the point of discharge. Localized or spot ventilation at the course shaker screens would have a blower, knockout pot and associated carbon filter to remove any H_2S gas, volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs).

In addition to desanding train influent treatment with ferric sulfate, and spot ventilation at the course screen shakers; desanding processing of sediments from dredging operations in DMU-2 will initially be carried out in level B respiratory protection until air monitoring would allow a downgrade.

Attachment D-5
Summary of H_2S Bench Tests
New Bedford Harbor Superfund Site
October and December 2004

Overview

The oil field industry routinely treats drilling fluid slurries for hydrogen sulfide (H_2S) by "de-gassing" technologies. On October 15-19, and December 8-16, 2004, a series of bench tests were conducted to determine if de-gassing of H_2S from the dredge slurry would be a successful method of controlling H_2S, as an alternative to ferric sulfate. The test results showed that de-gassing slurry at the natural pH of 7, will reliably remove H_2S from the dredge slurry. Furthermore, it appears that after de-gassing the slurry to zero H_2S concentration, and after allowing the slurry to stand for up to four hours, no further H_2S is formed and released, even when vigorous mixing is re-applied.

A preliminary evaluation of capital and operating costs was performed that compared ferric sulfate addition to slurry de-gassing at pH 7 and it was determined that de-gassing has a simple payback of less than two seasons compared to ferric sulfate addition.

Addition of sodium hydroxide (NaOH) and sulfuric acid (H_2SO_4) was also done to determine the amount of these chemicals required to shift slurry pH as low as 5.0 and as high as 8.5. This information is useful for operating cost estimates if pH shifts become part of the de-gassing strategy.

H_2S De-Gas Theory

Once the bacteria produce $S^=$ at the sediment pH of 7, $S^=$ instantly combines with H^+ present to form the highly soluble HS^-. At this neutral sediment pH, 50 percent of the HS^- will remain as HS^- and 50 percent will form both gaseous H_2S and dissolved H_2S, according to the equilibrium equation:

$$S^= + H^+ \leftrightarrow HS^- + H^+ \leftrightarrow H_2S\text{ (aqueous)} \leftrightarrow H_2S\text{ (gas)}$$

This equilibrium is highly pH dependent. If the pH is shifted to 5.0, approximately 99 percent of sulfides will exist as H_2S (both gaseous and aqueous). If the pH is shifted to 9.0, approximately 99 percent of the sulfides will exist as aqueous HS^-.

To liberate gaseous and aqueous H_2S, the slurry must be broken-up vigorously to create small droplets and thin films. High-speed mixing is required.

October Tests Conducted

The following tests were conducted:

Test #1

Description: vigorous mixing at 1,400 revolutions per minute (rpm), to remove all aqueous and gaseous H_2S without changing pH.

Materials: 30 percent dry solids sediment excavated from DMU-2. 400 milliliters (mL), 30 percent sediment was diluted with 400 mL city water and gently mixed to form a composite of 800 mL of 15 percent dry solids slurry, using the jar stirring unit at 150 rpm. Litmus paper was used to verify that the natural sediment is at pH 7.0.

Equipment: One jar stirring unit. One 3,000 mL plastic jar with screw-on lid: the lid features one hole for the agitator shaft and one for the active H_2S monitoring tube. One 14-volt, 1,400 rpm variable speed, portable drill and paint mixing blade. One portable, fan-driven H_2S monitor and one passive, ambient H_2S monitor. One paint filter (with paper towel liner) in a 1,000 mL beaker to dewater slurry to clear water for pH tests.

Procedure:

1. 800 mL of 15 percent slurry, pH = 7.0, was gently poured in the 3,000 mL de-gassing jar.
2. Head space 5 parts per million (ppm) H_2S.
3. Vigorous mixing at 1,400 rpm, for 30 seconds. Head space >90 ppm H_2S.
4. Lid off, passive aeration of jar by slight breeze for 30 seconds. **Head space 0.0 ppm H_2S. No H_2S odor.** Slight oil odor.

H_2S de-gassing to zero concentration is likely to be an instantaneous process, limited only by the vacuum applied and the rate of ventilation of the mix vessel. In this experiment, removal of H_2S gas from the vessel was slow due to no active means available for rapid ventilation of the vessel.

Test #2

Repeated Test #1. Identical procedure and results.

After de-gassing, added 1.0 mL, 50 percent NaOH solution, which shifted pH of 800 mL, 15 percent solids slurry to pH 8.5.

Test #3

Description: pH shift to 5.0, vigorous mixing at 1,400 rpm, to remove all aqueous and gaseous H_2S, plus all HS^-.

Materials: 30 percent dry solids sediment excavated from DMU-2. 400 mL 30 percent sediment was diluted with 400 mL city water and gently mixed to form a composite of 800 mL of 15 percent dry solids slurry, using the jar stirring unit at 150 rpm. Litmus paper was used to verify that the natural sediment is at pH 7.0. Added 98 percent H_2SO_4 to shift slurry pH to 5.0.

Equipment: One jar stirring unit. One 3,000 mL plastic jar with screw-on lid: the lid features one hole for the agitator shaft and one for the active H_2S monitoring tube. One 14-volt, 1,400 rpm variable speed, portable drill and paint mixing blade. One portable, fan-driven H_2S monitor and one passive, ambient H_2S monitor. One paint filter (with paper towel liner) in a 1,000 mL beaker to dewater slurry to clear water for pH tests.

Procedure:

1. 800 mL of 15 percent slurry, pH = 7.0.
2. Added 1.0 mL H_2SO_4 while gently stirring at 150 rpm. Verified pH shift to 5.0 and gently poured in the 3,000 mL de-gassing jar.
3. Head space 0.0 ppm H_2S.
4. Vigorous mixing at 1,400 rpm, for 30 seconds. Head space >90 ppm H_2S.
5. Lid off, passive aeration of jar by slight breeze for 30 seconds. **Head space 0.0 ppm H_2S. No H_2S odor.** Slight oil odor.
6. Added 2 mL 50 percent NaOH and 250 rpm mixing, which shifted slurry pH from 5.0 to 6.5.

Attachment D-5
Summary of H_2S Bench Tests
New Bedford Harbor Superfund Site
October and December 2004

December Tests Conducted

To further evaluate the H_2S control alternative of de-gassing pH 7.0 slurry, a test was conducted to determine if ventilation of the mix vessel could be rapid and perhaps shown to be the limiting step in H_2S removal. Another test was done to determine, after vigorous mixing to zero H_2S concentration, if further H_2S is formed and released, or if the de-gassed slurry is stable for further processing without H_2S releases. The following tests were conducted.

Test #1

Description: vigorous mixing at 1,400 rpm, to remove all aqueous and gaseous H_2S without changing pH.

Materials: 30 percent dry solids sediment excavated from DMU-2. 400 mL 30 percent sediment was diluted with 400 mL city water and gently mixed to form a composite of 800 ml of 15 percent dry solids slurry, using the jar stirring unit at 150 rpm.

Equipment: One 24 liter/minute (lpm) vacuum pump. One jar stirring unit. One 3,000 mL plastic jar with screw-on lid: the lid features one hole for the agitator shaft and one for the active H_2S monitoring tube. One 14-volt, 1,400 rpm variable speed, portable drill and paint mixing blade. One portable, fan-driven H_2S monitor and one passive H_2S monitor.

Procedure:

1. 800 mL of 15 percent slurry, pH = 7.0, was gently poured in the 3,000 mL de-gassing jar.
2. Head space 30 ppm H_2S.
3. Vacuum pump off. Vigorous mixing at 1,400 rpm, for 20 seconds. Head space >1,000 ppm H_2S.
4. Vacuum pump turned on for 30 seconds. Head space < 5 ppm H_2S. Slight oil odor.
5. Vigorous mixing at 1,400 rpm, for 60 seconds. Head space 270 ppm H_2S.
6. Vacuum pump turned on for 20 seconds. Head space 3 ppm H_2S. Slight oil odor.
7. Vigorous mixing at 1,400 rpm, for 20 seconds. Head space 5 ppm H_2S.
8. Vacuum pump turned on for 20 seconds. Head space 0 ppm H_2S. Slight oil odor.
9. Vacuum pump off. Mixing at 300 rpm, for two hours. Head space 0 ppm H_2S.

Attachment D-5
Summary of H_2S Bench Tests
New Bedford Harbor Superfund Site
October and December 2004

Test #2

Description: vigorous mixing at 1,400 rpm, to remove all aqueous and gaseous H_2S without changing pH.

Materials: 30 percent dry solids sediment excavated from DMU-2. 400 ml 30 percent sediment was diluted with 400 ml city water and gently mixed to form a composite of 800 mL of 15 percent dry solids slurry, with manual stirring.

Equipment: One 24 lpm vacuum pump. One jar stirring unit. One 3,000 mL plastic jar with screw-on lid: the lid features one hole for the agitator shaft and one for the active H_2S monitoring tube. One 14-volt, 1,400 rpm variable speed, portable drill and paint mixing blade. One portable, fan-driven H_2S monitor and one passive H_2S monitor.

Procedure:

1. 800 mL of 15 percent slurry, pH = 7.0, was gently poured in the 3,000 mL de-gassing jar.
2. Head space 1 ppm H_2S.
3. Passive H_2S monitor sensor was placed in vacuum pump exhaust pipe. Vacuum pump turned on. Vigorous mixing at 1,400 rpm, for 60 seconds. H_2S concentration in the 24 liters per minute (lpm) flow ranged from 0 to 100 ppm H_2S peak in the first 15 seconds then dropped to 4 ppm H_2S at the end of 60 seconds. The average concentration for the 14 data points collected was 63 ppm.

Test #3

Description: vigorous mixing at 1,400 rpm, to remove all aqueous and gaseous H_2S without changing pH.

Materials: 30 percent dry solids sediment excavated from DMU-2. 400 mL 30 percent sediment was diluted with 400 ml city water and gently mixed manually in the mix vessel to form 800 ml of 15 percent dry solids slurry.

Equipment: One 24 lpm vacuum pump. One jar stirring unit. One 3,000 ml plastic jar with screw-on lid: the lid features one hole for the agitator shaft and one for the active H_2S monitoring tube. One 14-volt, 1,400 rpm variable speed, portable drill and paint mixing blade. One portable, fan-driven H_2S monitor and fan-driven PID H_2S monitor.

Procedure:

1. 800 mL of 15 percent slurry, pH = 7.0, was gently poured in the 3,000 mL de-gassing jar.
2. Head space 30 ppm H_2S.

3. Both H_2S monitor sensors were placed in vacuum pump exhaust pipe. Vacuum pump turned on. Vigorous mixing at 1,400 rpm, for 70 seconds. H_2S concentration in the 24 lpm flow ranged from 0 to 31 ppm H_2S peak in the first 25 seconds then dropped to 3 ppm H_2S at the end of 70 seconds.
4. Same de-gassed slurry, now with head space 0 ppm H_2S. Slight oil odor. Let stand in enclosed mix vessel for four hours.
5. Vacuum pump on and vigorous mixing at 1,400 rpm, for 20 seconds. Head space 0 ppm H_2S. Slight oil odor.

Based on this step in the last test, it is concluded that after vigorous mixing to zero H_2S concentration, and after standing for four hours, no further H_2S was formed and released. Therefore it appears that the de-gassed slurry is stable for further processing with no further H_2S releases.

ATTACHMENT E

Jacobs Solids and Water Balance

Attachment E
Jacobs Solids and Water Balance
New Bedford Harbor Superfund Project

Date	Area C Totalized Slurry Flow		Debris Transferred from Building C to DDA Storage				Sand Transferred from Building C to DDA Storage				Estimated Filter Cake						Totalized Wastewater Treatment Plant Influent		Miscellaneous Calculations								
	YTD Totalized Slurry Flow [gal]	YTD Totalized Slurry Flow [tons]	YTD Wet Solids [tons]	Average % Dry Solids	YTD Dry Solids [tons]	YTD Water [tons]	YTD Wet Solids [tons]	Average % Dry Solids	YTD Dry Solids [tons]	YTD Water [tons]	YTD Number of Press Drops	YTD Cake Volume [cy]	YTD Wet Solids [tons]	Average % Dry Solids	YTD Dry Solids [tons]	YTD Water [tons]	Totalized Plant Influent [gal]	Totalized Plant Influent [tons]	Area C Influent Calculated, Average % Dry Solids	*Area C Influent Diluted, Average % Dry Solids*	Press Influent Calculated, Average % Dry Solids	*Press Influent Diluted, Average % Dry Solids*	DMU-2 $Fe_2(SO_4)_3$ Solution YTD Volume Applied [gal]	YTD Volume Ratio of Slurry to $Fe_2(SO_4)_3$ Solution	Debris as % of All Dry Solids YTD	Sand as % of All Dry Solids YTD	Cake as % of All Dry Solids YTD
9/1/2004 to 9-22-04	4,374,000		32	50	16	16	250	84	210	40	38	308	376	67	252	124	3,872,000										
Start of DMU-2 Dredging																											
9-23-04 to 10/1/2004	3,029,000	13,894	-	-	0	-	**126**	84	106	20	**94**	761	1,020	64	653	367	2,896,000	12,076	5.2	4.3	4.5	3.4			0	14	86
10/5/2004	4,424,000	20,293	**40**	50	20	20	**285**	84	239	46	**143**	1,158	1,552	63	978	574	4,337,000	18,085	5.7	4.7	4.6	3.5	3,000	1,475	2	19	79
10/8/2004	6,183,000	28,361	**72**	50	36	36	**381**	84	320	61	**230**	1,863	2,496	63	1,573	924	5,589,000	23,306	6.4	5.3	5.3	4.0			2	17	82
10/14/2004	8,194,434	37,588	**104**	50	52	52	**558**	84	469	89	**280**	2,268	3,039	61	1,854	1,185	7,734,000	32,251	5.9	4.9	4.7	3.5			2	20	78
10/15/2004	8,740,000	40,090	**128**	50	64	64	**706**	84	593	113	**299**	2,422	3,245	63	2,045	1,201	8,254,000	34,419	6.3	5.2	4.9	3.6			2	22	76
10/20/2004	10,391,000	47,664	**165**	50	83	83	706	84	593	113	**375**	3,038	4,070	60	2,442	1,628	10,162,000	42,376	6.1	5.1	4.9	3.7			3	19	78
10/22/2004	11,260,000	51,650	**201**	50	101	101	**889**	84	747	142	**416**	3,370	4,515	60	2,709	1,806	11,534,000	48,097	6.4	5.3	5.0	3.7	8,000	1,408	3	21	76
10/28/2004	13,603,000	62,397	**238**	50	119	119	889	84	747	142	**505**	4,091	5,481	62	3,398	2,083	13,950,000	58,172	6.4	5.3	5.2	3.9			3	18	80
11/1/2004	14,506,000	66,539	**248**	50	124	124	**1,051**	84	883	168	**540**	4,374	5,861	59	3,458	2,403	15,168,000	63,251	6.3	5.2	4.9	3.7			3	20	77
11/4/2004	16,083,000	73,773	**298**	50	149	149	1,051	84	883	168	**612**	4,957	6,643	61	4,052	2,591	16,906,000	70,498	6.4	5.3	5.2	3.9			3	17	80
11/8/2004	16,898,000	77,511	298	50	149	149	**1,198**	84	1,006	192	**648**	5,249	7,033	63	4,431	2,602	18,198,000	75,886	6.7	5.5	5.4	4.1			3	18	79
11/9/2004	17,291,000	79,314	298	50	149	149	1,198	84	1,006	192	**667**	5,403	7,240	63	4,561	2,679	18,630,000	77,687	6.7	5.5	5.4	4.1			3	18	80
11/10/2004	17,303,000	79,369	**326**	50	163	163	1,198	84	1,006	192	**672**	5,443	7,294	63	4,595	2,699	19,100,000	79,647	6.8	5.6	5.5	4.1			3	17	80
11/11/2004	17,291,000	79,314	326	50	163	163	**1,346**	84	1,131	215	**678**	5,492	7,359	63	4,636	2,723	19,453,000	81,119	7.0	5.7	5.5	4.2	12,000	1,441	3	19	78
																	DMU-2 averages		6.3	***5.2***	5.1	***3.8***	DMU-2 averages		2.3	18.5	79.2

Notes

Notes [a] through [f] estimate the overall reduction in dry solids between the Area C influent and the Area D press feed tanks.

a. Average slurry flow = 508,559 gal/day = 2,542,794 gal/wk

<u>b. Area C Dilution Water Flows [floor wash water]</u>

1. Water meter [hi & lo flows] was 432,165 gal from 8-24-04-04 to 11-9-04, = 43,200 gal/wk, less 2,200 gal/wk sanitary use = 41,000 gal/wk

<u>c. Area D Dilution Water Flows</u>

1. Main water meter [hi and lo flows] was 294,000 gal + 16,000 gal = 310,000 gal from 9-3-04 to 11-4-04, = 38,750 gal/wk
2. Polymer make-up water rate is 1.2 gpm/feed pump [confirmed by timing process meter], six pumps, = 7 gpm, 11 hrs/day, 5 days/wk = 23,100 gal/wk
3. Wash water is the difference between main meter flow minus the polymer make-up water = 15,650 gal/wk

<u>d. Area D Recycle Water Flows</u>

1. Sand filter backwash water use is 30,000 gal/vessel/wk, for four vessels = 120,000 gal/wk
2. Pipeline flush water use is 1,800 gpm, for 20 minutes, three times/day, five days/wk = 540,000 gal/wk
3. Estimated filtrate monitoring water is 5 gpm/press, six presses, 11 hrs/day, five days/wk = 99,000 gal/wk

Total polymer, wash, backwash, flush water, filtrate monitoring water = 838,750 gal/wk

e. The solids dilution ratio at Area C influent is from $C_2 = C_1V_1/V_2$. $V_1/V_2 =$ (2,543,000 gal/wk)/(540,000 gal/wk +2,543,000 gal/wk) = **0.82** 18 **% reduction of solids concentration due to Area C dilution pipeline flushing**

f. The solids dilution ratio at Area D feed tanks is from $C_2 = C_1V_1/V_2$. $V_1/V_2 =$ (2,543,000 gal/wk)/(839,000 gal/wk +2,543,000 gal/wk) = **0.75** 25 **% reduction of solids concentration due to Area D dilution [all souces listed]**

Overall 25 % reduction of solids concentration from Area C influent to Area D influent

g. Total 2004 CDF + DMU-2 scale-weighed debris [wet tons] = 358

h. Total 2004 CDF + DMU-2 scale-weighed sand [wet tons] = 1,597

i. Total 2004 CDF + DMU-2 scale-weighed filter cake [wet tons] = 7,063 [Total 2004 CDF + DMU-2 calculated filter cake [wet tons] = 7,735]

CDF = Confined Disposal Facility
cy = cubic yards
DDA = Debris Disposal Area
DMU = Dredge Management Unit
$Fe_2(SO_4)_3$ = ferric sulfate
gal = gallon
gpm = gallons per minute
hrs = hours
wk = week
YTD = year to date

ATTACHMENT F

Sevenson Operational Monitoring Data

Attachment F
Sevenson Operational Monitoring Data
New Bedford Harbor Superfund Site

Prod. Day #	Date	Daily Dredged Gallons	Dredged Gallons to Date	CDF Est. In-Situ cy Dredged	CDF In-Situ cy to Date	DMU-2 Est. In-Situ cy Dredged	DMU-2 In-Situ cy to Date	Average % Solids Dredged DMU-2	Average % Solids Dredged CDF	Average % Solids Press Feed	Average % Solids Filter Cake (f)	# Press On Line	Hours Oper-ated	# Press Drops	Total Drops to Date	Avg. Cycle Time (min)	Daily cy Filter Cake	cy Filter Cake to Date	Tons/ cy of Filter Cake	Daily Tons of Filter Cake	Tons of Filter Cake to Date	Sludge Gal/ Day	Total Sludge Gallons to Date
1	1-Sep	347,158	347,158	95	95	0.00	0.00	N/A	N/A	2.60%		6	12	0	0	N/A	0.0	0.0	0.00	0.00	0.00	347,158	347,158
2	2-Sep	174,722	521,880	156	251	0.00	0.00	N/A	N/A	1.00%	66.10%	3	12	2	2	2160	16.2	16.2	1.22	16.60	16.60	174,722	521,880
3	3-Sep	216,606	738,486	78	329	0.00	0.00	N/A	N/A	1.63%	66.30%	4	5	1	3	1800	8.1	24.3	1.22	8.30	24.90	216,606	738,486
4	8-Sep	454,565	1,193,051	0	329	52.00	52.00	15.08%	N/A	3.83%	66.29%	5	12	5	8	864	40.5	64.8	1.22	41.50	66.41	454,565	1,193,051
5	9-Sep	386,426	1,579,477	158	487	0.00	52.00	N/A	N/A	3.40%	65.01%	6	12	6	14	720	48.6	113.4	1.22	49.81	116.21	386,426	1,579,477
6	10-Sep	375,920	1,955,397	250	737	0.00	52.00	N/A	N/A	0.81%	65.48%	6	12	3	17	1440	24.3	137.7	1.22	24.90	141.11	375,920	1,955,397
7	13-Sep	410,764	2,366,161	107	844	0.00	52.00	N/A	N/A	N/A		6	12	0	17	0	0.0	137.7	1.22	0.00	141.11	410,764	2,366,161
8	14-Sep	481,440	2,847,601	154	998	0.00	52.00	N/A	16.80%	3.81%	67.78%	6	12	6	23	720	48.6	186.3	1.22	49.81	190.92	481,440	2,847,601
9	15-Sep	217,784	3,065,385	60	1,058	0.00	52.00	N/A	N/A	1.93%	67.63%	6	12	2	25	2160	16.2	202.5	1.22	16.60	207.52	217,784	3,065,385
10	16-Sep	185,138	3,250,523	110	1,168	0.00	52.00	N/A	10.13%	1.34%	65.51%	6	12	1	26	4320	8.1	210.6	1.22	8.30	215.82	185,138	3,250,523
11	17-Sep	244,090	3,494,613	88	1,256	0.00	52.00	N/A	3.56%	2.27%	66.27%	6	12	1	27	4320	8.1	218.7	1.22	8.30	224.12	244,090	3,494,613
12	20-Sep	333,147	3,827,760	117	1,373	0.00	52.00	N/A	2.60%	3.28%	68.61%	6	12	2	29	2160	16.2	234.9	1.22	16.60	240.73	333,147	3,827,760
13	21-Sep	333,124	4,160,884	100	1,473	0.00	52.00	N/A	5.18%	2.15%	70.19%	6	12	4	33	1080	32.4	267.3	1.22	33.20	273.93	333,124	4,160,884
14	22-Sep	213,427	4,374,311	90	1,563	100.73	152.73	20.35%	5.30%	3.23%	67.23%	6	12	5	38	864	40.5	307.8	1.22	41.50	315.43	213,427	4,374,311
								CDF Average =			66.87%												
Start of DMU-2 Dredging																							
15	23-Sep	549,786	4,924,097	0	1,563	181.60	334.33	15.55%	N/A	5.57%	67.34%	6	12	9	47	480	72.9	380.7	1.22	74.71	390.14	423,700	4,798,011
16	24-Sep	511,640	5,435,737	0	1,563	254.95	589.28	12.27%	N/A	5.40%	65.45%	6	12	13	60	332	105.3	486.0	1.22	107.91	498.05	538,800	5,336,811
17	27-Sep	351,674	5,787,411	0	1,563	271.00	860.28	7.90%	N/A	5.81%	65.50%	6	12	14	74	309	113.4	599.4	1.22	116.21	614.27	420,735	5,757,546
18	28-Sep	373,101	6,160,512	0	1,563	271.00	1,131.28	17.02%	N/A	8.35%	65.00%	6	12	14	88	309	113.4	712.8	1.34	151.96	766.22	482,893	6,240,439
19	29-Sep	64,486	6,224,998	0	1,563	79.69	1,210.97	N/A	N/A	2.33%	67.03%	5	12	4	92	1080	32.4	745.2	1.34	43.42	809.64	133,565	6,374,004
20	30-Sep	534,492	6,759,490	0	1,563	305.20	1,516.17	12.36%	N/A	6.72%	64.15%	5.5	12	16	108	270	129.6	874.8	1.34	173.66	983.30	469,509	6,843,513
21	1-Oct	643,968	7,403,458	0	1,563	455.00	1,971.17	17.05%	N/A	7.61%	63.53%	6	12	24	132	180	194.4	1,069.2	1.34	260.50	1,243.80	1,160,282	8,003,795
22	4-Oct	584,442	7,987,900	0	1,563	453.00	2,424.17	14.26%	N/A	5.43%	63.28%	6	12	24	156	180	194.4	1,263.6	1.34	260.50	1,504.29	728,641	8,732,436
23	5-Oct	809,843	8,797,743	0	1,563	472.00	2,896.17	14.77%	N/A	7.01%	63.16%	6	12	25	181	173	202.5	1,466.1	1.34	271.35	1,775.64	644,356	9,376,792
24	6-Oct	531,716	9,329,459	0	1,563	566.00	3,462.17	11.48%	N/A	9.13%	63.06%	6	12	30	211	144	243.0	1,709.1	1.34	325.62	2,101.26	607,062	9,983,854
25	7-Oct	577,772	9,907,231	0	1,563	563.00	4,025.17	22.22%	N/A	7.24%	62.89%	6	12	30	241	144	243.0	1,952.1	1.34	325.62	2,426.88	658,045	10,641,899
26	8-Oct	*650,000*	10,557,231	0	1,563	508.27	4,533.44	15.10%	N/A	7.86%	63.31%	6	12	27	268	160	218.7	2,170.8	1.34	293.06	2,719.94	616,499	11,258,398
27	11-Oct	546,419	11,103,650	0	1,563	268.09	4,801.53	11.83%	N/A	4.65%	64.24%	6	12	14	282	309	113.4	2,284.2	1.34	151.96	2,871.90	604,543	11,862,941
28	12-Oct	745,343	11,848,993	0	1,563	262.05	5,063.58	11.45%	N/A	3.91%	62.95%	6	12	14	296	309	113.4	2,397.6	1.34	151.96	3,023.85	661,065	12,524,006
29	13-Oct	245,257	12,094,250	0	1,563	170.00	5,233.58	N/A	N/A	5.40%	63.23%	6	12	9	305	480	72.9	2,470.5	1.34	97.69	3,121.54	351,452	12,875,458
30	14-Oct	474,184	12,568,434	0	1,563	237.00	5,470.58	7.53%	N/A	5.11%	61.05%	6	12	13	318	332	105.3	2,575.8	1.34	141.10	3,262.64	534,145	13,409,603
31	15-Oct	545,766	13,114,200	0	1,563	356.00	5,826.58	10.15%	N/A	3.84%	62.77%	6	12	19	337	227	153.9	2,729.7	1.34	206.23	3,468.87	531,135	13,940,738
32	18-Oct	537,946	13,652,146	0	1,563	436.00	6,262.58	14.82%	N/A	7.16%	60.85%	6	12	24	361	180	194.4	2,924.1	1.34	260.50	3,729.36	541,351	14,482,089
33	19-Oct	596,909	14,249,055	0	1,563	445.00	6,707.58	18.24%	N/A	7.03%	62.10%	6	12	24	385	180	194.4	3,118.5	1.34	260.50	3,989.86	643,191	15,125,280
34	20-Oct	516,439	14,765,494	0	1,563	519.00	7,226.58	20.30%	N/A	7.34%	60.33%	6	12	28	413	154	226.8	3,345.3	1.34	303.91	4,293.77	549,338	15,674,618
35	21-Oct	636,539	15,402,033	0	1,563	501.00	7,727.58	N/A	N/A	6.84%	60.62%	6	12	27	440	160	218.7	3,564.0	1.34	293.06	4,586.83	679,506	16,354,124
36	22-Oct	231,916	15,633,949	0	1,563	251.00	7,978.58	15.36%	N/A	5.93%	60.21%	6	12	14	454	309	113.4	3,677.4	1.34	151.96	4,738.79	458,401	16,812,525
37	25-Oct	547,308	16,181,257	0	1,563	313.00	8,291.58	20.40%	N/A	5.00%	58.14%	6	12	18	472	240	145.8	3,823.2	1.34	195.37	4,934.16	563,841	17,376,366
38	26-Oct	663,744	16,845,001	0	1,563	472.00	8,763.58	N/A	N/A	6.76%	60.73%	6	12	26	498	166	210.6	4,033.8	1.34	282.20	5,216.36	647,986	18,024,352
39	27-Oct	638,390	17,483,391	0	1,563	505.00	9,268.58	20.73%	N/A	7.65%	60.40%	6	12	28	526	154	226.8	4,260.6	1.34	303.91	5,520.27	676,396	18,700,748
40	28-Oct	493,896	17,977,287	0	1,563	315.00	9,583.58	13.74%	N/A	5.55%	61.99%	6	12	17	543	254	137.7	4,398.3	1.34	184.52	5,604.79	573,356	19,274,104
41	29-Oct	493,783	18,471,070	0	1,563	286.00	9,869.58	17.60%	N/A	5.65%	59.82%	6	12	16	559	270	129.6	4,527.9	1.34	173.66	5,678.45	575,113	19,849,217
42	1-Nov	409,393	18,880,463	0	1,563	336.00	10,205.58	17.07%	N/A	6.55%	59.22%	6	12	19	578	227	153.9	4,681.8	1.34	206.23	5,784.46	489,027	20,338,244
43	2-Nov	546,646	19,427,109	0	1,563	617.00	10,822.58	21.72%	N/A	8.35%	61.56%	6	12	33	611	131	267.3	4,949.1	1.34	358.18	6,090.94	592,375	20,930,619
44	3-Nov	630,336	20,057,445	0	1,563	503.00	11,325.58	14.35%	N/A	11.45%	60.19%	6	12	28	639	154	226.8	5,175.9	1.34	303.91	6,394.85	682,921	21,613,540
45	4-Nov	399,336	20,456,781	0	1,563	204.00	11,529.58	12.64%	N/A	5.00%	61.04%	6	9.5	11	650	393	89.1	5,265.0	1.34	119.39	6,514.25	531,324	22,144,864
46	5-Nov	496,594	20,953,375	0	1,563	439.00	11,968.58	16.31%	N/A	6.93%	61.18%	6	12.0	24	674	180	194.4	5,459.4	1.34	260.50	6,774.74	533,555	22,678,419
47	8-Nov	318,864	21,272,239	0	1,563	225.00	12,193.58	20.09%	N/A	4.85%	62.65%	6	12	12	686	360	97.2	5,556.6	1.34	130.25	6,904.99	487,073	23,165,492
48	9-Nov	392,834	21,665,073	0	1,563	357.00	12,550.58	13.24%	N/A	7.47%	62.82%	6	12	19	705	227	153.9	5,710.5	1.34	206.23	7,111.22	490,539	23,656,031
Averages		***508,552***						***13.46%***		***6.38%***	***62.41%***					***269***							
Winteriz1	10-Nov	12,120	21,677,193	0	1,563	94.00	12,644.58	N/A	N/A	3.38%	63.23%	6	12	5	710	864	40.5	5,751.0	1.34	54.27	7,165.49	497,101	24,153,132
Winteriz2	11-Nov	0	21,677,193	0	1,563	118.00	12,762.58	N/A	N/A	4.10%	65.91%	6	12	6	716	720	48.6	5,799.6	1.34	65.12	***7,230.61***	0	24,153,132
Winteriz3	15-Nov	0	21,677,193	0	1,563	0	12,762.58	N/A	N/A	N/A	N/A	0	N/A	0	716	0	0.0	5,799.6	1.34	0	0	0	0
Winteriz4	16-Nov	0	21,677,193	0	1,563	0	12,762.58	N/A	N/A	N/A	N/A	0	N/A	0	716	0	0.0	5,799.6	1.34	0	0	0	0
Winteriz5	17-Nov	0	21,677,193	0	1,563	0	12,762.58	N/A	N/A	N/A	N/A	0	N/A	0	716	0	0.0	5,799.6	1.34	0	0	0	0
																	Calculated total 2004 filter cake (tons)				***7,230.61***		

Notes

a. Jacobs has added final cake shipment amounts to this Sevenson operating data table to complete the table, as shown in bold, blue italics.

b. Jacobs has added debris and sand amounts transferred on 10-15-04 and 11-9-04 to complete the table.

c. Jacobs has added other notations for clarity.

d. Averages for the 15 days of >20 drops, out of 34 total DMU-2 operating days =	***7.59%***	***61.81%***	***27***	***163***
e. Averages for the 19 days of <20 drops, out of 34 total DMU-2 operating days =	***5.43%***	***62.87%***	***14***	***353***

f. These percentages are derived from grab samples periodically collected by Sevenson from the press feed. Because of the different method used, these percentages vary from those presented for the press feed by Jacobs in Attachment E.

Attachment F
Sevenson Operational Monitoring Data
New Bedford Harbor Superfund Site

Prod. Day #	Date	Total Gallons Water/ Day	Total Water to Date	Water Discharged (gal)	Total Gallons of Water Discharged	Average WWT gpm/Day	Est. Daily Sand cy	Est. Sand to Date cy	Tons Per Day of Sand	Total Tons of Sand	Total Tons of Sand Moved	Daily No. of Trucks	Est. Daily cy of Debris	Est. cy of Debris	Total Tons of Debris	Debris Truck load	Total Trucks of Debris	Trucks of Filter Cake	Ave. Tons/ Load Filter Cake	Tons of Filter Cake *Shipped*	Total Tons of Filter Cake *Shipped*	Tons of Filter Cake Remaining
1	1-Sep	206,600	206,600	141,000	141,000	286.94	12.5	12.5	23.8	23.8												0.00
2	2-Sep	237,100	443,700	178,000	319,000	329.31	14.5	27.0	27.6	51.3		0	2.5	2.50		0	0				0.00	0.00
3	3-Sep	54,800	498,500	67,000	386,000	152.22	10.0	37.0	19.0	70.3		0	2.0	4.50		0	0				0.00	0.00
4	8-Sep	344,100	842,600	261,000	647,000	477.92	12.0	49.0	22.8	93.1		0	2.0	6.50		0	0				0.00	0.00
5	9-Sep	446,700	1,289,300	362,000	1,009,000	620.42	14.0	63.0	26.6	119.7		0	7.0	13.50		0	0				0.00	0.00
6	10-Sep	323,400	1,612,700	246,000	1,255,000	449.17	7.0	70.0	13.3	133.0		0	0.0	13.50		0	0				0.00	0.00
7	13-Sep	318,400	1,931,100	231,000	1,486,000	442.22	8.0	78.0	15.2	148.2		0	0.0	13.50		0	0				0.00	0.00
8	14-Sep	446,000	2,377,100	341,000	1,827,000	619.44	12.0	90.0	22.8	171.0		0	1.0	14.50		0	0				0.00	0.00
9	15-Sep	147,600	2,524,700	119,000	1,946,000	205.00	12.0	102.0	22.8	193.8		0	1.5	16.00		0	0				0.00	0.00
10	16-Sep	181,600	2,706,300	98,000	2,044,000	252.22	11.0	113.0	20.9	214.7		0	1.0	17.00		0	0				0.00	0.00
11	17-Sep	266,000	2,972,300	155,000	2,199,000	369.44	9.0	122.0	17.1	231.8		0	3.0	20.00		0	0				0.00	0.00
12	20-Sep	252,600	3,224,900	204,000	2,403,000	350.83	11.0	133.0	20.9	252.7	250.3	14	1.0	21.00	32.27	1.5	1.5				0.00	0.00
13	21-Sep	367,500	3,592,400	273,000	2,676,000	510.42	8.0	141.0	15.2	267.9		0	1.0	22.00		0.0	1.5				0.00	0.00
14	22-Sep	279,800	3,872,200	204,000	2,880,000	388.61	6.0	147.0	11.4	279.3		0	1.0	23.00		0.0	1.5				0.00	0.00
																						0.00
Start of DMU-2 Dredging																						0.00
15	23-Sep	423,700	4,295,900	295,000	3,175,000	588.47	16.0	163.0	30.4	309.7		0	5.0	28.00		0.0	1.5				0.00	0.00
16	24-Sep	538,800	4,834,700	381,000	3,556,000	748.33	16.0	179.0	30.4	340.1		0	6.0	34.00		0.0	1.5				0.00	0.00
17	27-Sep	451,400	5,286,100	263,000	3,819,000	626.94	9.0	188.0	17.1	357.2		0	3.0	37.00		0.0	1.5				0.00	0.00
18	28-Sep	381,800	5,667,900	339,000	4,158,000	530.28	13.0	201.0	24.7	381.9		0	6.0	43.00		0.0	1.5				0.00	0.00
19	29-Sep	147,000	5,814,900	75,000	4,233,000	204.17	3.0	204.0	5.7	387.6		0	2.0	45.00		0.0	1.5	3	23.83	100.11	100.11	0.00
20	30-Sep	482,000	6,296,900	354,000	4,587,000	669.44	6.0	210.0	11.4	399.0		0	10.00	55.00		0.0	1.5	6	35.54	213.24	313.35	0.00
21	1-Oct	470,800	6,767,700	308,000	4,895,000	653.89	8.0	218.0	15.2	414.2	126.2	8	10.00	65.00		0.0	1.5	6	33.68	202.08	515.43	0.00
22	4-Oct	750,000	7,517,700	527,000	5,422,000	1,041.67	31.0	249.0	58.9	473.1		0	10.00	75.00		0.0	1.5	6	32.97	197.82	713.25	0.00
23	5-Oct	691,700	8,209,400	518,000	5,940,000	960.69	26.0	275.0	49.4	522.5		0	8.00	83.00	39.72	3.0	4.5	9	33.29	299.61	1,012.86	0.00
24	6-Oct	574,600	8,784,000	432,000	6,372,000	798.06	16.0	291.0	30.4	552.9	159.0	10	15.00	98.00		0	4.5	9	33.77	303.93	1,316.79	0.00
25	7-Oct	35,500	8,819,500	472,000	6,844,000	49.31	16.0	307.0	30.4	583.3		0	12.00	110.00		0	4.5	9	33.77	296.44	1,613.23	0.00
26	8-Oct	641,000	9,460,500	44,400	6,888,400	890.28	13.0	320.0	24.7	608.0	95.5	5	10.00	120.00	32.28	3	7.5	6	34.16	204.96	1,818.19	0.00
27	11-Oct	562,300	10,022,800	435,000	7,323,400	780.97	13.0	333.0	24.7	632.7		0	7.00	127.00		0	7.5	9	33.99	305.87	2,124.06	0.00
28	12-Oct	699,300	10,722,100	524,000	7,847,400	971.25	9.0	342.0	17.1	649.8		0	4.00	131.00		0	7.5	9	33.37	300.33	2,424.39	0.00
29	13-Oct	350,800	11,072,900	243,000	8,090,400	487.22	5.0	347.0	9.5	659.3		0	5.00	136.00		0	7.5	9	33.18	298.62	2,723.01	0.00
30	14-Oct	533,400	11,606,300	401,000	8,491,400	740.83	11.0	358.0	20.9	680.2	176.9	9	16.00	152.00	31.89	3	10.5	6	33.86	203.16	2,926.17	0.00
31	15-Oct	519,600	12,125,900	363,000	8,854,400	721.67	15.0	373.0	28.5	708.7	***148.0***	8	5.00	157.00	23.62	2	12.5	6	33.08	198.48	3,124.65	0.00
32	18-Oct	754,700	12,880,600	429,000	9,283,400	1,048.19	18.0	391.0	34.2	742.9		0	10.00	167.00		0	12.5	6	33.19	199.14	3,323.79	0.00
33	19-Oct	621,900	13,502,500	465,000	9,748,400	863.75	40.0	431.0	76.0	818.9		0	30.00	197.00		0	12.5	6	32.76	196.56	3,520.35	0.00
34	20-Oct	531,800	14,034,300	403,000	10,151,400	738.61	15.0	446.0	28.5	847.4		0	15.00	212.00	36.51	3	15.5	6	33.20	199.20	3,719.55	0.00
35	21-Oct	665,700	14,700,000	465,000	10,616,400	924.58	8.0	454.0	15.2	862.6		0	12.00	224.00		0	15.5	9	33.56	302.04	4,021.59	0.00
36	22-Oct	705,500	15,405,500	268,000	10,884,400	979.86	3.0	457.0	5.7	868.3	183.0	9	3.00	227.00	36.44	3	18.5	6	33.56	201.36	4,222.95	0.00
37	25-Oct	564,900	15,970,400	427,000	11,311,400	784.58	12.0	469.0	22.8	891.1		0	8.00	235.00		0	18.5	9	34.13	307.17	4,530.12	0.00
38	26-Oct	662,600	16,633,000	492,000	11,803,400	920.28	25.0	494.0	47.5	938.6		0	20.00	255.00		0	18.5	6	33.65	201.90	4,732.02	0.00
39	27-Oct	641,500	17,274,500	466,000	12,269,400	890.97	21.0	515.0	39.9	978.5		0	12.00	267.00		0	18.5	6	33.91	203.46	4,935.48	0.00
40	28-Oct	547,700	17,822,200	395,000	12,664,400	760.69	17.0	532.0	32.3	1010.8		0	10.00	277.00	37.15	3	21.5	9	34.17	307.53	5,243.01	0.00
41	29-Oct	547,700	18,369,900	384,000	13,048,400	760.69	20.0	552.0	38.0	1048.8			15.00	292.00		0	21.5	3	34.03	102.09	5,345.10	0.00
42	1-Nov	669,900	19,039,800	392,000	13,440,400	930.42	12.0	564.0	22.8	1071.6	161.7	8	8.00	300.00	10.44	1	22.5	3	33.47	100.41	5,445.51	0.00
43	2-Nov	555,700	19,595,500	411,000	13,851,400	771.81	15.0	579.0	28.5	1100.1		0	10.00	310.00		0	22.5	6	34.27	205.62	5,651.13	0.00
44	3-Nov	663,300	20,258,800	484,000	14,335,400	921.25	12.0	591.0	22.8	1122.9		0	15.00	325.00		0	22.5	6	34.46	206.76	5,857.89	0.00
45	4-Nov	518,900	20,777,700	392,000	14,727,400	720.69	11.0	602.0	20.9	1143.8		0	12.00	337.00	49.92	3	25.5	6	34.23	205.38	6,063.27	0.00
46	5-Nov	515,900	21,293,600	353,000	15,080,400	716.53	24.0	626.0	45.6	1189.4		0	10.00	347.00		0	25.5	6	34.04	204.24	6,267.51	0.00
47	8-Nov	776,200	22,069,800	424,000	15,504,400	1,078.06	8.5	634.5	16.2	1205.6	148.2	7	6.00	353.00		0	25.5	6	34.44	206.62	6,474.13	0.00
48	9-Nov	432,600	22,502,400	318,000	15,822,400	600.83	8.0	642.5	15.2	1220.8		0	5.00	358.00		0	25.5	0	0.00	0.00	6,474.13	0.00
Averages		***547,947***																				0.00
Winteriz1	10-Nov	470,000	22,972,400	323,000	16,145,400	652.78	2.0	644.5	3.8	1224.6		0	1.00	359.00	***28.00***	0	25.5	0	0.00	0.00	6,474.13	0.00
Winteriz2	11-Nov	352,400	23,324,800	258,000	16,403,400	489.44	0.0	644.5	0.0	1224.6	147.6	7	0.00	359.00		0	25.5	0	0.00	0.00	6,474.13	0.00
Winteriz3	15-Nov	0																	0.00	***306.67***	***6,780.80***	0.00
Winteriz4	16-Nov	0																	0.00	***207.61***	***6,988.41***	0.00
Winteriz5	17-Nov	0																	0.00	***74.01***	***7,062.42***	0.00
								Total DMU-2 Sand = (Transferred to DDA)			***1,346***	***Total DMU-2 Debris = (Transferred to DDA)***			***326***	***Total 2004 filter cake shipped =***					***7,062.42***	
								Total 2004 Sand = (Transferred to DDA)			***1,597***	***Total 2004 Debris = (Transferred to DDA)***			***358***							

avg = average
CDF = Confined Disposal Facility
cy = cubic yard
DMU = Dredge Management Unit
est. = estimated

gal = gallon
gpm = gallons per minute
no. = number
prod. = production
WWT = wastewater treatment

ATTACHMENT G

T&D Reports

Table G-1
Fine Screenings Transport Log – Area C
New Bedford Harbor Superfund Site 2004 Season

Date	Sevenson Vehicle Number	Time on Vehicle Weight Ticket	Weights (Pounds)			Waste Type (TSCA or Non-TSCA)	Initials of Weigher	Comments
			Tare (Empty) Weight	Gross (Loaded) Weight	Net (Waste) Weight			
09/21/04	M409	0836	25,960	65,840	39,880	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	0945	25,960	59,480	33,520	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	1008	25,960	63,680	37,720	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	1025	25,960	62,420	36,460	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1038	25,960	63,880	37,920	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1055	25,960	62,880	36,920	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1110	25,960	62,340	36,380	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1123	25,960	62,100	36,140	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	1137	25,960	63,580	37,620	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	1151	25,960	64,220	38,260	Non-TSCA	REM	Stockpiled at Area C
09/21/04	M409	1257	25,960	62,920	36,960	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1311	25,960	63,380	37,420	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1327	25,960	59,020	33,060	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1350	25,960	48,360	22,400	Non-TSCA	AJT	Stockpiled at Area C
10/01/04	M409	0809	25,960	61,420	35,460	TSCA	REM	Stockpiled at Area C
10/01/04	M409	0912	25,960	62,140	36,180	TSCA	REM	Stockpiled at Area C
10/01/04	M409	0924	25,960	62,140	36,180	TSCA	REM	Stockpiled at Area C
10/01/04	M409	0936	25,960	57,860	31,900	TSCA	REM	Stockpiled at Area C
10/01/04	M409	0949	25,960	59,020	33,060	TSCA	REM	Stockpiled at Area C
10/01/04	M409	1000	25,960	58,800	32,840	TSCA	REM	Stockpiled at Area C
10/01/04	M409	1015	25,960	61,920	35,960	TSCA	REM	Stockpiled at Area C
10/01/04	M409	1028	25,960	36,820	10,860	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1123	25,960	60,140	34,180	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1331	25,960	61,600	35,640	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1344	25,960	58,820	32,860	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1356	25,960	61,260	35,300	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1410	25,960	57,980	32,020	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1427	25,960	60,260	34,300	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1442	25,960	58,880	32,920	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1458	25,960	60,880	34,920	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1512	25,960	64,140	38,180	TSCA	REM	Stockpiled at Area C
10/06/04	M409	1524	25,960	33,600	7,640	TSCA	REM	Stockpiled at Area C

Table G-1
Fine Screenings Transport Log – Area C
New Bedford Harbor Superfund Site 2004 Season

Date	Sevenson Vehicle Number	Time on Vehicle Weight Ticket	Weights (Pounds) Tare (Empty) Weight	Gross (Loaded) Weight	Net (Waste) Weight	Waste Type (TSCA or Non-TSCA)	Initials of Weigher	Comments
10/08/04	M409	1619	25,960	62,880	36,920	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1635	25,960	65,440	39,480	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1649	25,960	62,460	36,500	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1704	25,960	64,180	38,220	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1720	25,960	65,840	39,880	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1002	25,960	69,580	43,620	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1016	25,960	65,880	39,920	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1027	25,960	63,160	37,200	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1038	25,960	64,840	38,880	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1050	25,960	64,260	38,300	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1102	25,960	63,840	37,880	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1113	25,960	66,280	40,320	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1128	25,960	68,940	42,980	TSCA	REM	Stockpiled at Area C
10/14/04	M409	1143	25,960	60,720	34,760	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1517	25,960	64,780	38,820	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1532	25,960	64,880	38,920	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1543	25,960	62,780	36,820	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1554	25,960	60,620	34,660	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1606	25,960	66,140	40,180	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1617	25,960	60,680	34,720	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1628	25,960	61,200	35,240	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1641	25,960	62,520	36,560	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1643	25,960	62,600	36,640	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1656	25,960	63,960	38,000	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1707	25,960	63,760	37,800	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1720	25,960	61,380	35,420	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1731	25,960	62,860	36,900	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1741	25,960	63,300	37,340	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1751	25,960	61,460	35,500	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1804	25,960	64,320	38,360	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1815	25,960	64,380	38,420	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1828	25,960	57,920	31,960	TSCA	REM	Stockpiled at Area C

Table G-1
Fine Screenings Transport Log – Area C
New Bedford Harbor Superfund Site 2004 Season

Date	Sevenson Vehicle Number	Time on Vehicle Weight Ticket	Weights (Pounds)			Waste Type (TSCA or Non-TSCA)	Initials of Weigher	Comments
			Tare (Empty) Weight	Gross (Loaded) Weight	Net (Waste) Weight			
11/01/04	M409	0937	25,960	63,660	37,700	TSCA	SC	Stockpiled at Area C
11/01/04	M409	0951	25,960	69,100	43,140	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1003	25,960	62,000	36,040	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1018	25,960	69,800	43,840	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1031	25,960	67,880	41,920	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1047	25,960	66,960	41,000	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1100	25,960	63,840	37,880	TSCA	SC	Stockpiled at Area C
11/01/04	M409	1120	25,960	67,460	41,500	TSCA	SC	Stockpiled at Area C
11/08/04	M409	1014	25,960	72,820	46,860	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1026	25,960	69,840	43,880	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1043	25,960	73,460	47,500	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1057	25,960	68,000	42,040	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1109	25,960	66,200	40,240	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1122	25,960	62,880	36,920	TSCA	REM	Stockpiled at Area C
11/08/04	M409	1135	25,960	64,880	38,920	TSCA	REM	Stockpiled at Area C
11/11/04	M409	1046	25,960	73,920	47,960	TSCA	SC	Stockpiled at Area C
11/11/04	M409	1103	25,960	74,980	49,020	TSCA	SC	Stockpiled at Area C
11/11/04	M409	1117	25,960	69,840	43,880	TSCA	SC	Stockpiled at Area C
11/11/04	M409	1145	25,960	68,400	42,440	TSCA	SC	Stockpiled at Area C
11/11/04	M409	0113	25,960	67,420	41,460	TSCA	SEF	Stockpiled at Area C
11/11/04	M409	0132	25,960	65,640	39,680	TSCA	SEF	Stockpiled at Area C
11/11/04	M409	0215	25,960	56,680	30,720	TSCA	SEF	Stockpiled at Area C

Notes:
TSCA = Toxic Substances Control Act

Table G-2
Coarse Screenings Transport Log – Area C
New Bedford Harbor Superfund Site 2004 Season

Date	Sevenson Vehicle Number	Time on Vehicle Weight Ticket	Weights (Pounds) Tare (Empty) Weight	Gross (Loaded) Weight	Net (Waste) Weight	Waste Type (TSCA or Non-TSCA)	Initials of Weigher	Comments
09/21/04	M409	1610	25,960	67,380	41,420	Non-TSCA	AJT	Stockpiled at Area C
09/21/04	M409	1648	25,960	49,080	23,120	Non-TSCA	AJT	Stockpiled at Area C
10/05/04	M409	1646	25,960	49,380	23,420	TSCA	REM	Stockpiled at Area C
10/05/04	M409	1714	25,960	53,960	28,000	TSCA	REM	Stockpiled at Area C
10/05/04	M409	1735	25,960	53,980	28,020	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1532	25,960	46,200	20,240	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1550	25,960	49,360	23,400	TSCA	REM	Stockpiled at Area C
10/08/04	M409	1606	25,960	46,880	20,920	TSCA	REM	Stockpiled at Area C
10/14/04	M409	0827	25,960	49,860	23,900	TSCA	REM	Stockpiled at Area C
10/14/04	M409	0855	25,960	51,700	25,740	TSCA	REM	Stockpiled at Area C
10/14/04	M409	0925	25,960	40,100	14,140	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1446	25,960	50,240	24,280	TSCA	REM	Stockpiled at Area C
10/15/04	M409	1504	25,960	48,920	22,960	TSCA	REM	Stockpiled at Area C
10/20/04	M409	0848	25,960	49,940	22,980	TSCA	REM	Stockpiled at Area C
10/20/04	M409	0900	25,960	48,120	22,160	TSCA	REM	Stockpiled at Area C
10/20/04	M409	0932	25,960	53,840	27,880	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1554	25,960	46,280	20,320	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1607	25,960	51,940	25,980	TSCA	REM	Stockpiled at Area C
10/22/04	M409	1624	25,960	52,540	26,580	TSCA	REM	Stockpiled at Area C
10/28/04	M409	1031	25,960	49,420	23,460	TSCA	REM	Stockpiled at Area C
10/28/04	M409	1046	25,960	50,600	24,640	TSCA	REM	Stockpiled at Area C
10/28/04	M409	1110	25,960	52,160	26,200	TSCA	REM	Stockpiled at Area C
11/01/04	M409	1202	25,960	46,880	20,920	TSCA	SC	Stockpiled at Area C
11/04/04	M409	1214	25,960	55,580	29,620	TSCA	SC	Stockpiled at Area C
11/04/04	M409	1232	25,960	53,480	27,520	TSCA	SC	Stockpiled at Area C
11/04/04	M409	1247	25,960	53,080	27,120	TSCA	SC	Stockpiled at Area C
11/04/04	M409	1300	25,960	41,540	15,580	TSCA	SC	Stockpiled at Area C
11/10/04	M409	1117	25,960	54,860	28,900	TSCA	SC	Stockpiled at Area C
11/10/04	M409	1135	25,960	47,820	21,860	TSCA	SC	Stockpiled at Area C
11/10/04	M409	1208	25,960	31,580	5,620	TSCA	SC	Stockpiled at Area C

Note:
TSCA = Toxic Substances Control Act

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
09/29/04	4D00001	MI9525346	34,880	100,660	65,780	29,837	Paul
09/29/04	4D00002	MI9525347	36,100	106,620	70,520	31,887	Ron
09/29/04	4D00003	MI9525348	34,300	98,220	63,920	28,994	Steve
09/30/04	4D00004	MI9525349	36,100	104,560	68,460	31,053	Ron
09/30/04	4D00005	MI9525350	34,880	105,460	70,580	32,014	Paul
09/30/04	4D00006	MI9525351	34,300	103,820	69,520	31,534	Steve
09/30/04	4D00007	MI9525352	36,100	108,180	72,080	32,695	Ron
09/30/04	4D00008	MI9525353	34,300	105,900	71,600	32,477	Steve
09/30/04	4D00009	MI9525354	34,880	109,100	74,220	33,666	Paul
10/01/04	4D00010	MI9525355	36,100	105,920	69,820	31,670	Ron
10/01/04	4D00011	MI9525356	34,300	103,300	69,000	31,298	Steve
10/01/04	4D00012	MI9525357	34,880	103,500	68,620	31,126	Paul
10/01/04	4D00013	MI9525358	34,300	100,500	66,200	30,028	Steve
10/01/04	4D00014	MI9525359	34,880	101,480	66,600	30,209	Paul
10/01/04	4D00015	MI9525360	36,100	100,020	63,920	28,994	Ron
10/04/04	4D00016	MI9525361	34,880	103,420	68,540	31,089	Paul
10/04/04	4D00017	MI9525362	36,100	103,700	67,600	30,663	Ron
10/04/04	4D00018	MI9525363	34,300	102,140	67,840	30,772	Steve
10/04/04	4D00019	MI9525364	34,880	96,500	61,620	27,950	Paul
10/04/04	4D00020	MI9525365	36,100	101,320	65,220	29,583	Ron
10/04/04	4D00021	MI9525366	34,300	99,320	65,020	29,493	Steve
10/05/04	4D00022	MI9525367	34,300	101,360	67,060	30,418	Steve
10/05/04	4D00023	MI9525368	34,880	99,140	64,260	29,148	Paul
10/05/04	4D00024	MI9525369	36,100	100,360	64,260	29,148	Ron
10/05/04	4D00025	MI9525370	34,880	100,220	65,340	29,638	Paul; Tractor on Manifest
10/05/04	4D00026	MI9525371	34,300	103,000	68,700	31,162	Steve; Wrong truck number on Weight Ticket
10/05/04	4D00027	MI9525372	36,100	103,660	67,560	30,645	Ron
10/05/04	4D00028	MI9525373	34,880	98,740	63,860	28,996	Paul
10/05/04	4D00029	MI9525374	34,300	102,480	68,180	30,926	Steve
10/05/04	4D00030	MI9525375	36,100	106,080	69,980	31,742	Ron
10/06/04	4D00031	MI9525423	34,880	105,900	71,020	32,214	Paul
10/06/04	4D00032	MI9525424	34,300	104,340	70,040	31,770	Steve
10/06/04	4D00033	MI9525425	36,100	98,240	62,140	28,186	Ron

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
10/06/04	4D00034	MI9525426	34,880	100,840	65,960	29,919	Paul
10/06/04	4D00035	MI9525427	34,300	103,220	68,920	31,262	Steve
10/06/04	4D00036	MI9525428	36,100	106,660	70,560	32,005	Ron
10/06/04	4D00037	MI9525429	36,100	102,960	66,860	30,327	Ron
10/06/04	4D00038	MI9525430	34,880	101,460	66,580	30,200	Paul
10/06/04	4D00039	MI9525431	34,300	100,240	65,940	29,910	Steve
10/07/04	4D00040	MI9525432	36,100	104,800	68,700	31,162	Ron
10/07/04	4D00041	MI9525433	34,880	99,900	65,020	29,493	Paul
10/07/04	4D00042	MI9525434	34,300	100,720	66,420	30,128	Steve
10/07/04	4D00043	MI9525435	34,880	103,960	69,080	31,334	Paul
10/07/04	4D00044	MI9525436	36,100	102,660	66,560	30,191	Ron
10/07/04	4D00045	MI9525437	34,300	100,540	66,240	30,046	Steve
10/07/04	4D00046	MI9525438	36,100	99,920	63,820	28,948	Ron
10/07/04	4D00047	MI9525439	34,300	97,960	63,660	28,876	Steve
10/07/04	4D00048	MI9525440	34,240*	97,620	63,380	28,749	Paul; Tare Weight reestablished*, same trailer, different box
10/08/04	4D00049	MI9525451	36,100	104,480	68,380	31,017	Ron
10/08/04	4D00050	MI9525452	34,240	103,320	69,080	31,334	(Substitute Box) Paul
10/08/04	4D00051	MI9525453	34,300	101,620	67,320	30,536	Steve
10/08/04	4D00052	MI9525454	36,100	106,640	70,540	31,996	Ron
10/08/04	4D00053	MI9525455	34,240	101,520	67,280	30,518	(Substitute Box) Paul
10/08/04	4D00054	MI9525456	34,300	101,620	67,320	30,536	Steve
10/11/04	4D00055	MI9526501	34,300	104,340	70,040	31,770	Steve
10/11/04	4D00056	MI9526502	36,100	106,840	70,740	32,087	Ron
10/11/04	4D00057	MI9526503	34,880	100,400	65,520	29,719	Paul
10/11/04	4D00058	MI9526504	34,300	102,480	68,180	30,926	Steve
10/11/04	4D00059	MI9526505	36,100	104,760	68,660	31,144	Ron
10/11/04	4D00060	MI9526506	34,880	100,860	65,980	29,928	Paul
10/11/04	4D00061	MI9526507	34,300	100,880	66,580	30,200	Steve
10/11/04	4D00062	MI9526508	34,880	103,940	69,060	31,325	Paul
10/11/04	4D00063	MI9526509	36,100	103,080	66,980	30,382	Ron
10/12/04	4D00064	MI9526510	34,880	101,220	66,340	30,091	Paul
10/12/04	4D00065	MI9526511	34,300	9,120	64,820	29,402	Steve

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
10/12/04	4D00066	MI9526512	36,100	102,460	66,360	30,100	Ron
10/12/04	4D00067	MI9526513	34,880	102,820	67,940	30,817	Paul
10/12/04	4D00068	MI9526514	34,300	100,680	66,380	30,109	Steve
10/12/04	4D00069	MI9526515	36,100	104,240	68,140	30,908	Ron
10/12/04	4D00070	MI9526516	36,100	101,100	65,000	29,484	Ron
10/12/04	4D00071	MI9526517	34,880	103,660	68,980	31,289	Paul
10/12/04	4D00072	MI9526518	34,300	101,040	66,740	30,273	Steve
10/13/04	4D00073	MI9526519	34,880	100,700	65,820	29,855	Paul
10/13/04	4D00074	MI9526520	36,100	102,420	66,320	30,082	Ron
10/13/04	4D00075	MI9526521	34,300	98,960	64,660	29,329	Steve
10/13/04	4D00076	MI9526522	34,880	100,740	65,860	29,874	Paul
10/13/04	4D00077	MI9526523	36,100	102,800	66,700	30,255	Ron
10/13/04	4D00078	MI9526524	34,300	101,880	67,580	30,654	Steve
10/13/04	4D00079	MI9526525	36,100	100,060	63,960	29,012	Ron
10/13/04	4D00080	MI9526526	34,880	103,520	68,640	31,135	Paul
10/13/04	4D00081	MI9526527	34,300	102,000	67,700	30,708	Steve
10/14/04	4D00082	MI9526528	34,880	101,820	66,940	30,363	Paul
10/14/04	4D00083	MI9526529	36,100	107,240	71,140	32,269	Ron
10/14/04	4D00084	MI9526530	34,300	101,500	67,200	30,481	Steve
10/14/04	4D00085	MI9526531	36,100	103,600	67,500	30,617	Ron
10/14/04	4D00086	MI9526532	34,300	101,520	67,220	30,490	Steve
10/14/04	4D00087	MI9526533	34,880	101,140	66,260	30,055	Paul
10/15/04	4D00088	MI9526534	36,100	102,320	66,220	30,037	Ron
10/15/04	4D00089	MI9526535	34,880	101,300	66,420	30,128	Paul
10/15/04	4D00090	MI9526536	34,300	101,080	66,780	30,291	Steve
10/15/04	4D00091	MI9526537	36,100	100,880	64,780	29,384	Ron
10/15/04	4D00092	MI9526538	34,300	101,320	67,020	30,400	Steve
10/15/04	4D00093	MI9526539	34,880	100,640	65,760	29,828	Paul
10/18/04	4D00094	MI9526540	36,100	101,560	65,460	29,692	Ron
10/18/04	4D00095	MI9526541	34,300	101,060	66,760	30,282	Steve
10/18/04	4D00096	MI9526542	34,880	104,080	69,200	31,389	Paul
10/18/04	4D00097	MI9526543	36,100	101,920	65,820	29,855	Ron
10/18/04	4D00098	MI9526544	34,880	100,760	65,880	29,883	Paul
10/18/04	4D00099	MI9526545	34,300	99,500	65,200	29,574	Steve

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
10/19/04	4D00100	MI9526546	36,100	101,480	65,380	29,656	Ron
10/19/04	4D00101	MI9526547	34,300	98,900	64,600	29,302	Steve
10/19/04	4D00102	MI9526548	34,880	101,240	66,360	30,100	Paul
10/19/04	4D00103	MI9526549	36,100	100,260	64,160	29,102	Ron
10/19/04	4D00104	MI9526550	34,300	101,220	66,920	30,354	Steve
10/19/04	4D00105	MI9526701	34,880	100,560	65,680	29,792	Paul
10/20/04	4D00106	MI9526702	34,880	100,980	66,100	29,982	Paul
10/20/04	4D00107	MI9526703	36,100	99,520	63,420	28,767	Ron
10/20/04	4D00108	MI9526704	34,300	100,980	66,680	30,246	Steve
10/20/04	4D00109	MI9526705	34,880	102,100	67,220	30,490	Paul
10/20/04	4D00110	MI9526706	36,100	105,080	68,980	31,289	Ron
10/20/04	4D00111	MI9526707	34,300	100,280	65,980	29,928	Steve
10/21/04	4D00112	MI9526708	34,300	104,020	69,720	31,624	Steve
10/21/04	4D00113	MI9526709	34,880	101,760	66,880	30,336	Paul
10/21/04	4D00114	MI9526710	36,100	104,450	68,440	31,044	Ron
10/21/04	4D00115	MI9526711	36,100	102,000	65,900	29,892	Ron
10/21/04	4D00116	MI9526712	34,300	100,240	65,940	29,910	Steve
10/21/04	4D00117	MI9526713	34,880	101,160	66,280	30,064	Paul
10/21/04	4D00118	MI9526714	36,100	101,720	65,620	29,765	Ron
10/21/04	4D00119	MI9526715	34,880	101,860	66,980	30,382	Paul
10/21/04	4D00120	MI9526716	34,300	102,680	68,380	31,017	Steve
10/22/04	4D00121	MI9526717	36,100	104,720	68,620	31,126	Ron
10/22/04	4D00122	MI9526718	34,300	101,160	66,860	30,327	Steve
10/22/04	4D00123	MI9526719	34,880	101,000	66,120	29,992	Paul
10/22/04	4D00124	MI9526720	36,100	103,860	67,760	30,735	Ron
10/22/04	4D00125	MI9526721	34,300	100,260	65,960	29,919	Steve
10/22/04	4D00126	MI9526722	34,880	102,220	67,340	30,545	Paul
10/25/04	4D00127	MI9526723	35,140*	104,260	69,120	31,352	Ron, *Reestablished Tare Weight – fuel tank 3/8 full; decision made to use 35,500 for normal tare in future
10/25/04	4D00128	MI9526724	34,880	103,520	68,640	31,135	Paul
10/25/04	4D00129	MI9526725	34,300	103,100	68,800	31,207	Steve

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
10/25/04	4D00130	MI9526726	35,500	104,480	68,980	31,289	Ron
10/25/04	4D00131	MI9526727	34,300	102,360	68,060	30,871	Steve
10/25/04	4D00132	MI9526728	34,880	102,280	67,400	30,572	Paul
10/25/04	4D00133	MI9526733	35,500	103,480	67,980	30,835	Ron
10/25/04	4D00134	MI9526734	34,300	101,940	67,640	30,681	Steve
10/25/04	4D00135	MI9526735	34,880	102,660	67,780	30,744	Paul
10/26/04	4D00136	MI9526736	35,500	102,080	66,580	30,200	Ron
10/26/04	4D00137	MI9526737	34,300	102,880	68,580	31,107	Steve
10/26/04	4D00138	MI9526738	34,880	102,500	67,620	30,672	Paul
10/26/04	4D00139	MI9526739	35,500	102,140	66,640	30,227	Ron
10/26/04	4D00140	MI9526740	34,300	101,020	66,720	30,264	Steve
10/26/04	4D00141	MI9526741	34,880	102,500	67,620	30,672	Paul
10/27/04	4D00142	MI9526742	35,500	103,560	68,060	30,871	Ron
10/27/04	4D00143	MI9526743	34,300	100,180	65,880	29,883	Steve
10/27/04	4D00144	MI9526744	34,880	102,080	67,200	30,481	Paul
10/27/04	4D00145	MI9526745	35,500	104,260	68,760	31,189	Ron
10/27/04	4D00146	MI9526746	34,300	103,360	69,060	31,325	Steve
10/27/04	4D00147	MI9526747	34,880	102,280	68,000	30,844	Paul
10/28/04	4D00148	MI9526748	35,500	103,660	68,160	30,917	Ron
10/28/04	4D00149	MI9526749	34,880	102,440	67,560	30,645	Paul
10/28/04	4D00150	MI9526750	34,300	100,200	65,900	29,892	Steve
10/28/04	4D00151	MI9526751	34,880	104,240	69,360	31,461	Paul
10/28/04	4D00152	MI9526752	35,500	103,640	68,140	30,908	Ron
10/28/04	4D00153	MI9526753	34,300	103,820	69,520	31,534	Steve
10/28/04	4D00154	MI9526754	35,500	104,960	69,460	31,507	Ron
10/28/04	4D00155	MI9526755	34,880	103,140	68,260	30,962	Paul
10/28/04	4D00156	MI9526756	34,300	103,040	68,740	31,180	Steve
10/29/04	4D00157	MI9526757	35,500	103,460	67,960	30,826	Ron
10/29/04	4D00158	MI9526758	34,300	102,800	68,500	31,071	Steve
10/29/04	4D00159	MI9526759	34,880	102,620	67,740	30,726	Paul
11/01/04	4D00160	MI9526760	34,880	102,320	67,440	30,590	Paul
11/01/04	4D00161	MI9526761	34,300	100,040	65,740	29,819	Steve
11/01/04	4D00162	MI9526762	35,500	103,120	67,620	30,672	Ron
11/02/04	4D00163	MI9526763	34,300	102,260	67,960	30,826	Steve

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
11/02/04	4D00164	MI9526764	34,880	103,100	68,220	30,944	Paul
11/02/04	4D00165	MI9526765	35,500	103,180	67,680	30,644	Ron
11/02/04	4D00166	MI9526766	34,300	103,680	69,380	31,470	Steve
11/02/04	4D00167	MI9526767	34,880	103,660	68,780	31,198	Paul
11/02/04	4D00168	MI9526768	35,500	104,740	69,240	31,407	Ron
11/03/04	4D00169	MI9526769	34,300	103,020	68,720	31,171	Steve
11/03/04	4D00170	MI9526770	34,880	104,420	69,540	31,543	Paul
11/03/04	4D00171	MI9526771	35,500	105,040	69,540	31,543	Ron; Took 25,000 pounds to clean up production thru 11/1/04.
11/03/04	4D00172	MI9526772	34,300	104,160	69,860	31,688	Steve
11/03/04	4D00173	MI9526773	34,880	103,020	68,140	30,908	Paul
11/03/04	4D00174	MI9526774	35,500	103,240	67,740	30,726	Ron
11/04/04	4D00175	MI9526775	34,880	103,820	68,940	31,271	Paul
11/04/04	4D00176	MI9526776	34,300	104,200	69,900	31,706	Steve
11/04/04	4D00177	MI9526777	35,500	105,300	69,800	31,661	Ron
11/04/04	4D00178	MI9526778	34,880	105,280	70,400	31,933	Paul
11/04/04	4D00179	MI9526779	34,300	100,200	65,900	29,892	Steve
11/04/04	4D00180	MI9526780	35,500	101,320	65,820	29,855	Ron
11/05/04	4D00181	MI9526781	34,880	102,040	67,160	30,463	Paul
11/05/04	4D00182	MI9526782	34,300	102,220	67,920	30,808	Steve
11/05/04	4D00183	MI9526783	35,500	100,720	65,220	29,583	Ron
11/05/04	4D00184	MI9526784	34,880	104,240	69,360	31,461	Paul
11/05/04	4D00185	MI9526785	35,500	104,560	69,060	31,325	Ron
11/05/04	4D00186	MI9526786	34,300	104,100	69,800	31,661	Steve
11/08/04	4D00187	MI9526787	34,880	102,460	67,580	30,654	Paul
11/08/04	4D00188	MI9526788	34,300	104,380	70,080	31,788	Steve
11/08/04	4D00189	MI9526789	35,500	104,040	68,540	31,089	Ron
11/08/04	4D00190	MI9526790	35,500	105,440	69,940	31,724	Ron
11/08/04	4D00191	MI9526791	34,300	103,760	69,460	31,507	Steve
11/08/04	4D00192	MI9526792	34,880	102,520	67,640	30,681	Paul
11/15/04	4D00193	MI9526862	34,300	103,700	69,400	31,479	Steve
11/15/04	4D00194	MI9526863	34,880	103,120	68,240	30,953	Paul
11/15/04	4D00195	MI9526864	35,500	101,580	66,080	29,973	Ron

Table G-3
Toxic Substances Control Act Filter Cake Waste Transport Log – Area D
New Bedford Harbor Superfund Site 2004 Season

Date	Shipper Manifest Document Number	State Manifest Document Number	Weights (Pounds)			Waste Weight (kilograms)	Driver/Comments
			Tare Weight	Loaded Weight	Net (Waste) Weight		
11/15/04	4D00196	MI9526865	35,500	103,640	68,140	30,908	Ron
11/15/04	4D00197	MI9526866	34,880	104,160	69,280	31,425	Paul
11/15/04	4D00198	MI9526867	34,300	102,160	67,860	30,781	Steve
11/15/04	4D00199	MI9526868	34,880	103,360	68,480	31,062	Paul
11/15/04	4D00200	MI9526869	34,300	102,960	68,660	31,144	Steve
11/15/04	4D00201	MI9526870	35,500	102,700	67,200	30,481	Ron
11/16/04	4D00202	MI9526871	34,300*	103,080	68,780	31,198	Paul; *Should have been 34,880
11/16/04	4D00203	MI9526872	35,500	105,180	69,680	31,606	Ron
11/16/04	4D00204	MI9526873	34,300	103,380	69,080	31,334	Steve
11/16/04	4D00205	MI9526874	35,500	104,120	68,620	31,126	Ron
11/16/04	4D00206	MI9526875	34,880	105,600	70,720	32,078	Paul
11/16/04	4D00207	MI9526876	34,300	102,640	68,340	30,999	Steve
11/17/04	4D00208	MI9526877	34,880	98,960	64,080	29,066	Paul
11/17/04	4D00209	MI9526878	34,300	99,800	65,500	29,710	Steve
11/17/04	4D00210	MI9526879	35,500	53,940	18,440	8,364	Ron

ATTACHMENT H

Sevenson FY 2004 Winterization Task List

Attachment H
Sevenson FY2004 Winterization Task Lisk
New Bedford Harbor Superfund Site

Task	Status
Winterization Duration 11-3-04 to 11-19-04	
Dredges	
1. Remove CDF dredge to Area D, rinse-off in CDF, ship off-site	Return to Sevenson
2. Rinse-off 1st H&H at DMU-2, move to Area D, spray-off in river at Area D [with oil boom in river], ship off-site	Return to Sevenson
3. Rinse-off 2nd H&H at DMU-2, move to Area D, spray-off in river at Area D [with oil boom in river], store on east parking area	Store at Area D
4. Rinse-off 1st Mudcat at DMU-2, move to Area D, spray-off in river at Area D [with oil boom in river], store on east parking area	Store at Area D
5. Rinse-off 2nd Mudcat at DMU-2, move to Area D, spray-off in river at Area D [with oil boom in river], store on east parking area	Store at Area D
DMU-2	
1. Remove cables, store at Area C	Store at Area C
2. Remove silt curtains, store at Area C	Store at Area C
3. Rinse excavator at DMU-2, remove to Area C, ship off-site	Store at Area C
4. Remove barges to Area C and pin to docks	Store at Area C docks
5. Remove oil boom to Area C and store on plastic, under a tarp	Store at Area C
6. Remove debris scow to Area C, remove debris.	Store at Area C
7. Remove debris scow to Area D, spray-off in river at Area D [with oil boom in river], store on east parking area	Store at Area D
River Pipelines from DMU-2 down to Area C	
1. Flush lines with river water then blow-out with air	Completed
2. Pull in pipelines between DMU-2 and Area C. Store in water, floating near shore in the Area C cove.	Store near shore at Area C cove
3. Remove land-based pipe at Aerovox and Booster Station to Area C	Store at Area C
4. Remove floating section of pipeline between I-195 and Coggeshall St. bridges. Store in water, floating near shore in the Area C cove.	Store near shore at Area C cove
Aerovox	
1. Empty ferric tank into tote and move tote to Area D WWTP	Completed
2. Flush chemical lines and metering pumps with water into pipeline	Completed
3. Remove metering pumps and lines to storage shed. Move shed to Area C.	Store at Area C
4. Remove diesel tank to Area C.	Store at Area C
5. Return rental lights, generator and portable toilet	Completed
6. Rinse containment and create drain	Completed
7. Secure ferric tank by removing ladder from side of tank	***Completed***
Booster Station	
1. Remove pump skids to Area C, winterize	Store at Area C
2. Remove city water hoses to Area C	Store at Area C
3. Remove diesel tank to Area C.	Store at Area C
4. Disassemble containment and move to Area C	Store at Area C
5. Return rental lights, generator and portable toilet	Completed
6. Review status of site after demobilization with property owner	***Completed***

Attachment H
Sevenson FY2004 Winterization Task Lisk
New Bedford Harbor Superfund Site

Task	Status
7. Change lock to key type and distribute keys to Jacobs, Jeff Jones, NBH Resident Office	***Completed***
Area C - Docks	
1. Lock-up gowning trailer and gates	Store at Area C
2. Pull boats out at Area C, spray-off over river, store at Area C	Store at Area C
3. Install Gate	***Completed***
Area C - DDA Storage	
1. Wash dozer, forklift, flatbed truck and dump truck at Area C and ship off-site	Return to Sevenson
2. Secure tarps on debris and sand piles. Add sand bags roped together, on 10 foot centers or as required, to hold down tarps for the four winter months.	Completed
Area C - Ponds	
1. Pump down Pond #1 [CDF] and Pond #2 as low as possible	Completed
2. Re-fill Pond #2 with city hydrant water [for equipment flushing]	Completed
Area C - Desanding Bldg.	
1. Move all debris and sand to DDA Storage	Completed
2. Flush equipment and floors with city water, air-blow piping	Remain at Area C
3. Dispose of spent PPE	Stored in Building
Area C - General	
1. Remove new oil booms to inside Desanding Building	
Area D	
1. Flush tanks and pipes with city water. Drain all vessels and associated water lines.	Remain at Area D
2. Complete all housekeeping and clean-up of plant, including washing sediment from floor drains and off exterior tanks and vessels	Completed
3. Pump out sumps, treat water. Lift-out sump pump in load-out area [unheated].	Completed
4. Complete final drops and remove final load of filter cake, and PPE, from building	Completed
5. Add sandbags along plant influent/effluent pipes down to low water mark	Completed
6. Move all WWTP chemical totes into main process building and close overhead doors between WWTP and main process building. Set thermostats in main process building at 55^{o}F.	
7. Coating has been scaped off load-out floor	***No Change***
8. Gap in perimeter fence at waters edge near pipeline connection bulkhead	***No Change***
9. Set thermostat for winter, set security alarm	***Completed***

Note: Items indicated in bold italics were added to the Winterization list during a follow-up inspection completed at the conclusion of Winterization activities

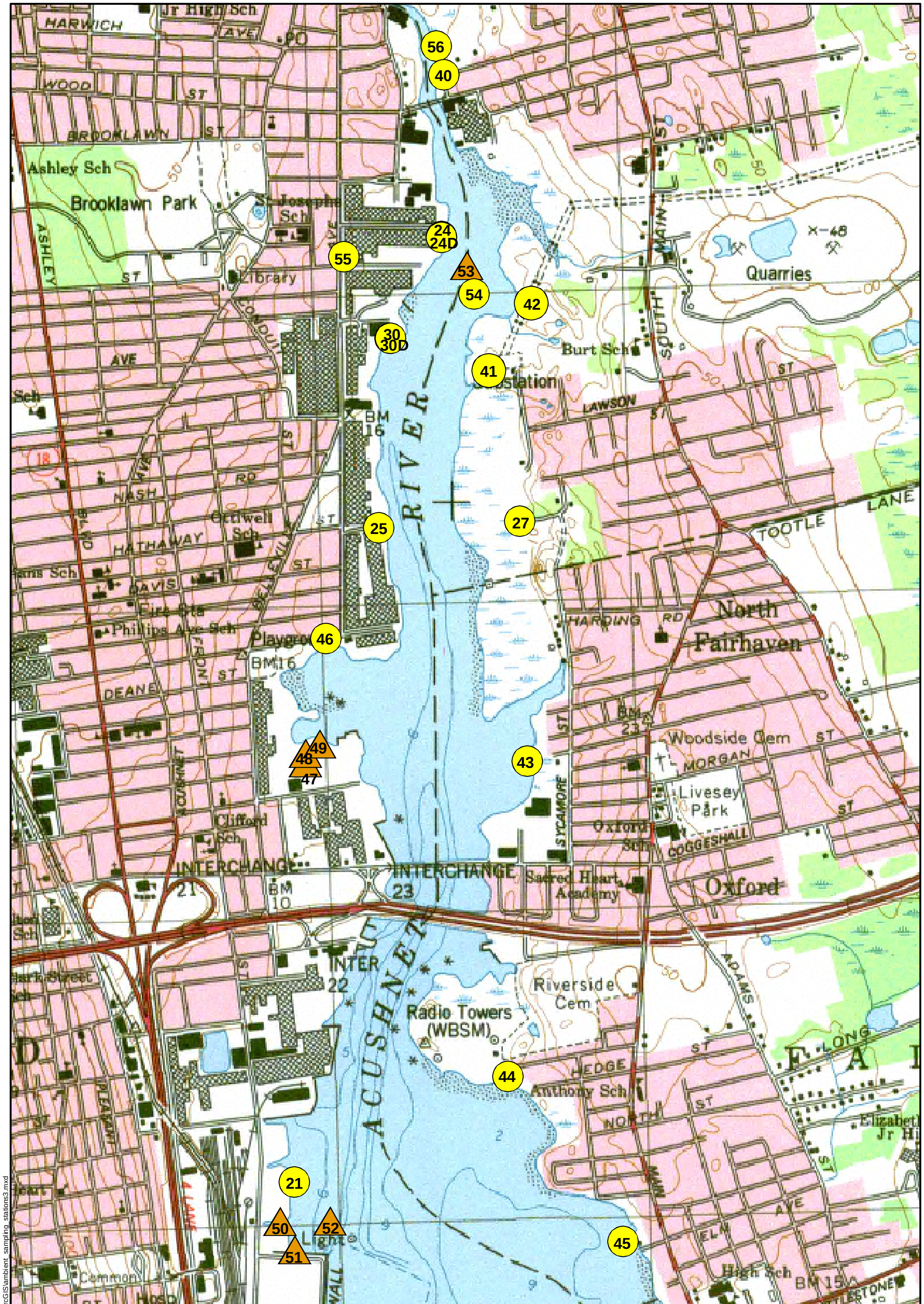
Notes:
CDF = Confined disposal Facility
DDA = Debris Disposal Area
DMU = Dredge Management Unit
PPE = personal protective equipment
WWTP = Wastewater Treatment Plan

ATTACHMENT I

Ambient Air Monitoring Information

Table I-1
Ambient PCB Sample
Station Locations

Station Number	Station Type	Location	City/Town	Northing	Easting
21	M	New Bedford Welding	New Bedford	2696913.00000	814013.00000
24	M	Aerovox NE corner	New Bedford	2706941.00000	815574.00000
24D	M	Aerovox duplicate	New Bedford	2706932.00000	815574.00000
25	M	Cliftex, Manomet Street	New Bedford	2703854.00000	814907.00000
27	M	Francis St (Porter)	Fairhaven	2703925.00000	816405.00000
30	M	Fiber Leather	New Bedford	2705861.00000	815029.00000
30D	M	Fiber Leather duplicate	New Bedford	2705864.00000	815034.00000
40	M	Wood St (Titleist)	Acushnet	2705820.00000	814933.00000
41	M	NSTAR substation	Acushnet	2705524.00000	816074.00000
42	M	NSTAR North	Fairhaven	2706236.00000	816524.00000
43	M	Bus Terminal Lot	Fairhaven	2701377.00000	816482.00000
44	M	Taber St (Pumping Station)	Fairhaven	2698035.00000	816277.00000
45	M	Cozy Cove Marina	Fairhaven	2684279.00000	817739.00000
46	M	Coffin Ave	New Bedford	2703796.00000	814947.00000
47	S	Area C Downwind	New Bedford	2701361.00000	814129.00000
48	S	Area C Crosswind	New Bedford	2701462.00000	814128.00000
49	S	Area C Upwind	New Bedford	2701564.00000	814279.00000
50	S	Area D Downwind	New Bedford	2696198.00000	814012.00000
51	S	Area D Crosswind	New Bedford	2696500.00000	812858.00000
52	S	Area D Upwind	New Bedford	2695390.00000	814397.00000
53	S	DMU2 Dredge	Varies	2706636.00000	815839.00000
54	M	DMU2 DW on barge	Varies	2706333.00000	815917.00000
55	M	Aerovox West (R7 receptor)	New Bedford	2706728.00000	814540.00000
56	M	Acushnet Park	New Bedford	2708962.00000	815519.00000



Aerial Photography MASSGIS 2003

Legend

Ambient Air Sampling Locations

- Mobile Station
- Stationary Station

N

0 750 1,500 Feet

1:18,000

JE JACOBS

Ambient Air Sampling Station Locations

New Bedford Harbor Superfund Site

August 2004

NAME: jpicculo DATE: 12/1/2004 Figure I-1

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Table I-2
Ambient Monitoring Program
Total Detectable PCB in Air

Sampling [2] Period	Station 24 Aerovox [3]	Station 53 DMU-2 Dredge [3]	Station 25 Cliftex [3]	Station 46 Coffin Ave [3]	Station 47 Area C DW	Station 48 Area C CW	Station 49 Area C UW	Station 50 Area D UW	Station 51 Area D CW	Station 52 Area D DW	24-Duplicate	Blank ng/ sample
6.28/29	2286	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	56	NS[1]	NS[1]	0.27
9.8/9	1024	723	167	145	28	37	56	19	16	47	1088	1.4
9.13/14	1449	98	229	48	64	64	86	38	39	61	QC [4]	0.77
9.22/23	588	1212	97	5	7	10	19	6	5	19	5	0.46
9.27/28	9557	2734	423	342	35	165	207	80	75	115	QC [4]	1.23
10.18/19	599	704	259	36	47	48	66	17	74	100	47	0.6
11.4/5 [5]												
12.1/2 [5]												

Notes:

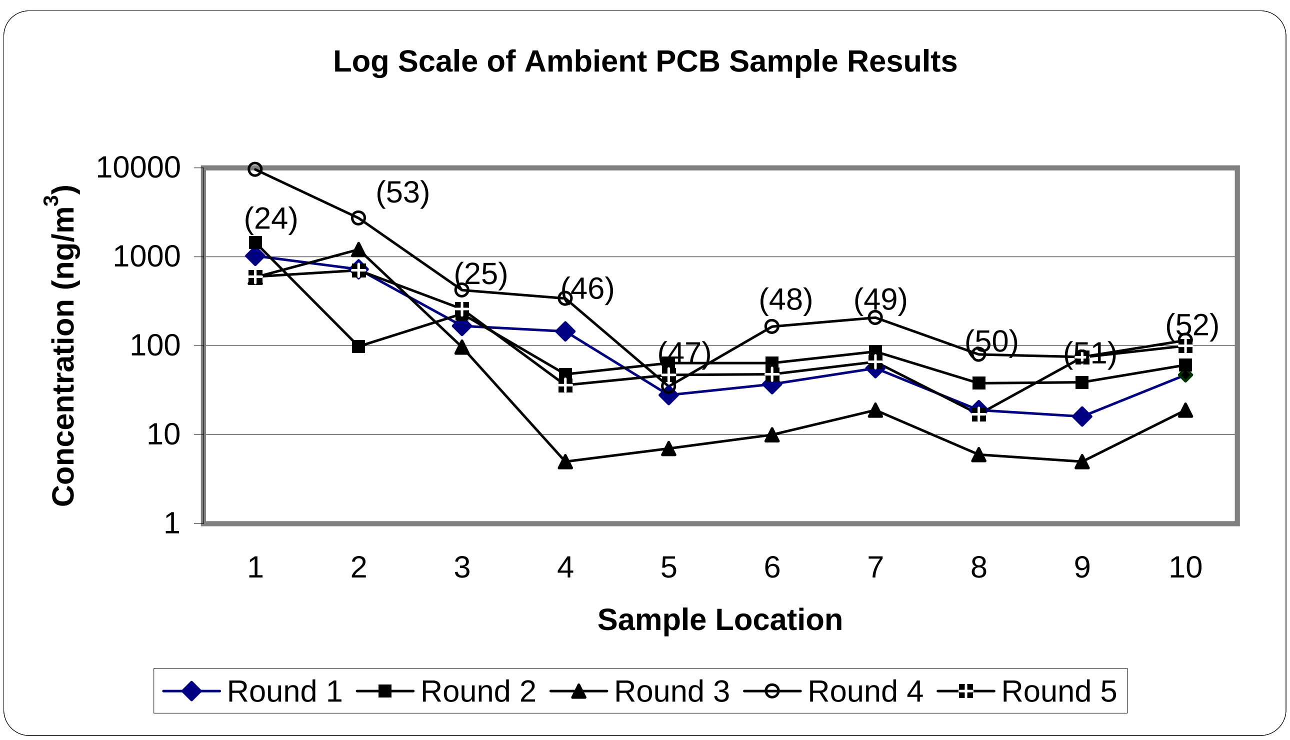
(1) NS - Not Sampled. This was a performance test on new low flow method.

(2) Sampled and analyzed using EPA TO-10a methodology.

(3) All results reported for 24hr time-weighted average in nanograms per cubic meter of air (ng/m ^{3}).

(4) Duplicate sent to USACE laboratory.

(5) Awaiting analytical results.



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 24 Aerovox

Exposure Budget Slope (EBS) = 664 (ng/m^3-day)

Collection Date: 9/28/2004

Construction Activity: Dredging of DMU-2 and susequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

C5, C6,C5&C7, C1,C2, and C3 concentration triggers were identified during this sampling period. These triggering conditions indicate a low response level with the response being to evaluate the cause and significance of the triggering conditions. The higher total PCB concentration observed at the sampling station during this period was probably caused by a combination of the higher ambient temperature, calm winds directed toward the station and a relatively high background concentration. Additionally, negative low tides and large areas of floating oils probably contributed to the higher ambient concentrations. In response to this situation, additional measures to control surface oil were implemented by adding oil booms around the perimeter of the dredge and additional surface skimming by dragging oil boom by boat.

Monitoring Station		24 Aerovox
Exposure Budget Slope		664
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	1,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	230

Air Sampling Status Report

Sample Station : 24 Aerovox
Collection Date: 9/28/2004
Measured PCB Concentration (ng/m^3): 9557
Exposure Budget Expended During This Period: 763.9%
Cumulative Exposure Budget Expended to Date: 42.7%
Response Level: LOW
Response: Evaluate the Cause and Significance of the Triggering Conditions

Triggers:

Low

Trigger C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%

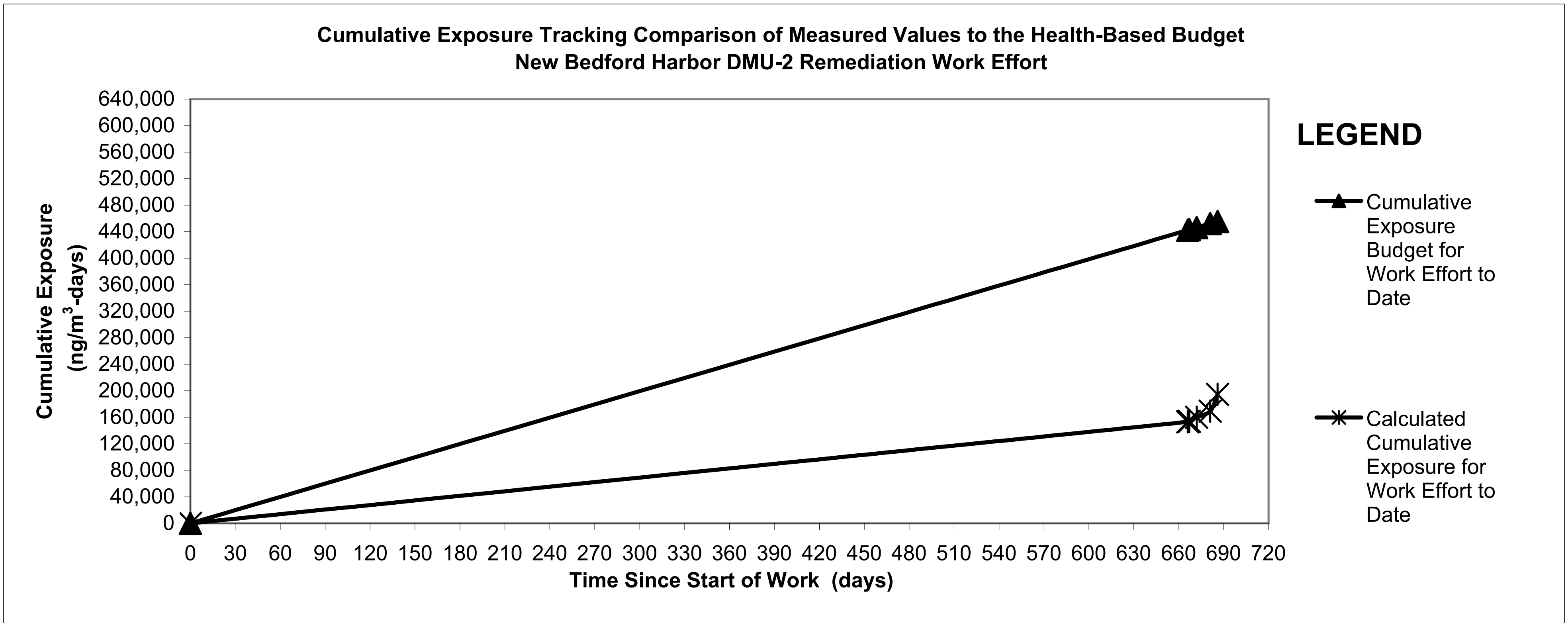
Trigger C6: Previous Two Measured Concentrations Exceed the Running Average Concentration

Trigger C5 and Trigger C7: C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%; C7: Measured Concentration has Doubled Since the Last Monitoring Period

Trigger C1: Measured Concentration Exceeds Maximum Occupational Limit

Trigger C2: Measured Concentration Exceeds Minimum TEL/NTEL for a Worker in the Public

Trigger C3: Measured Concentration Exceeds the Risk-Based Exposure Point Concentration Forming



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 25 Cliftex

Exposure Budget Slope (EBS) = 824 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

The C5 and C6 concentration triggers were identified during this sampling period. Thes triggering conditions indicate a low response level with the response being to evaluate the cause and significance of the triggering conditions. The higher total PCB concentration observed at the sampling station during this period was probably caused by a combination of the higher ambient temperature, calm winds directed toward the station and a relatively high background concentration. Since the expenditure of the cumulative exposure budget to date was still at a low level at this point in the project, no change in field procedures is warranted.

Home Sheet

Monitoring Station		25 Cliftex
Exposure Budget Slope		824
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	70

Air Sampling Status Report

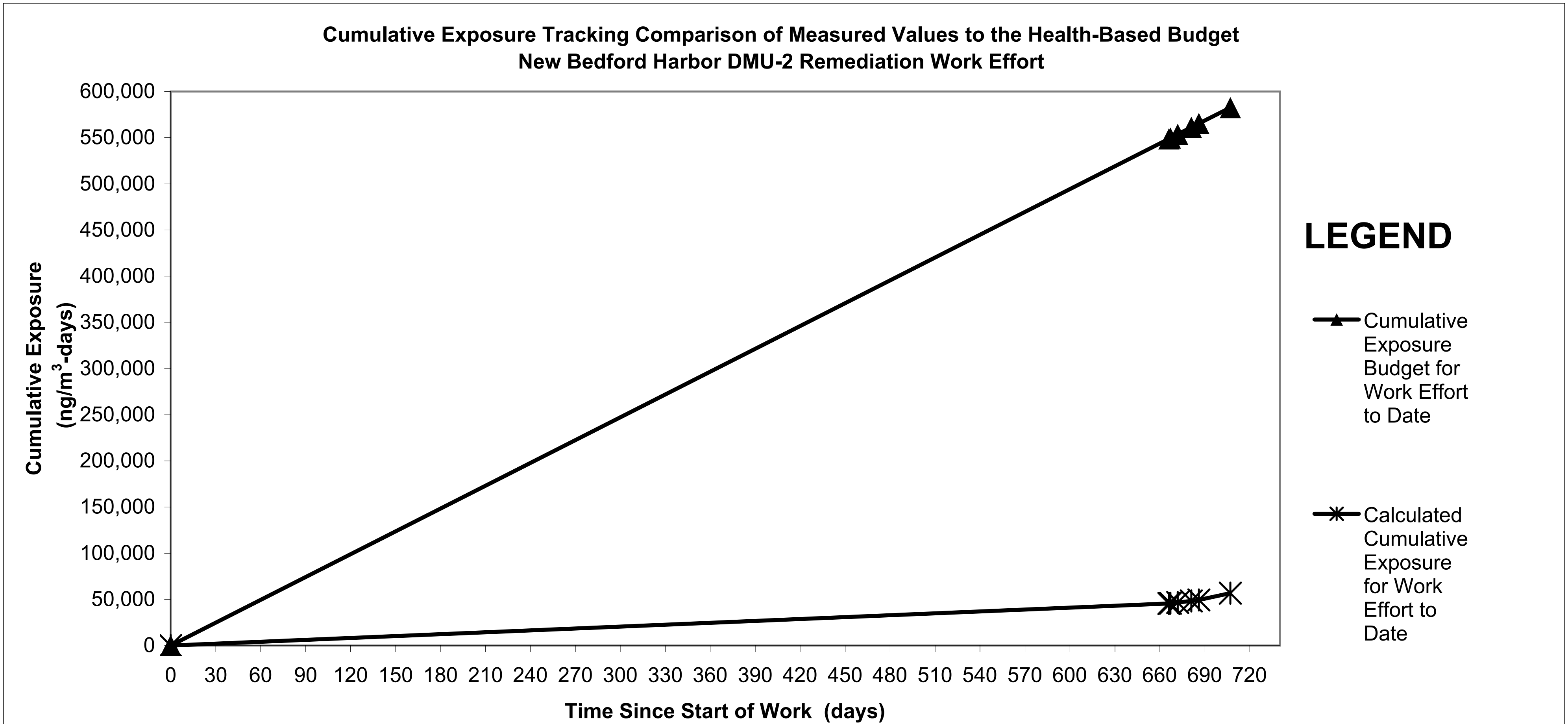
Sample Station : 25 Cliftex
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 256
Exposure Budget Expended During This Period: 41.2%
Cumulative Exposure Budget Expended to Date: 9.7%
Response Level: LOW
Response: Evaluate the Cause and Significance of the Triggering Conditions

Triggers:

Low

Trigger C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%

Trigger C6: Previous Two Measured Concentrations Exceed the Running Average



35BG0103
1/7/2005

Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 46 Coffin Ave
Exposure Budget Slope (EBS) = 779 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

No triggers were identified therefore no response is necessary.

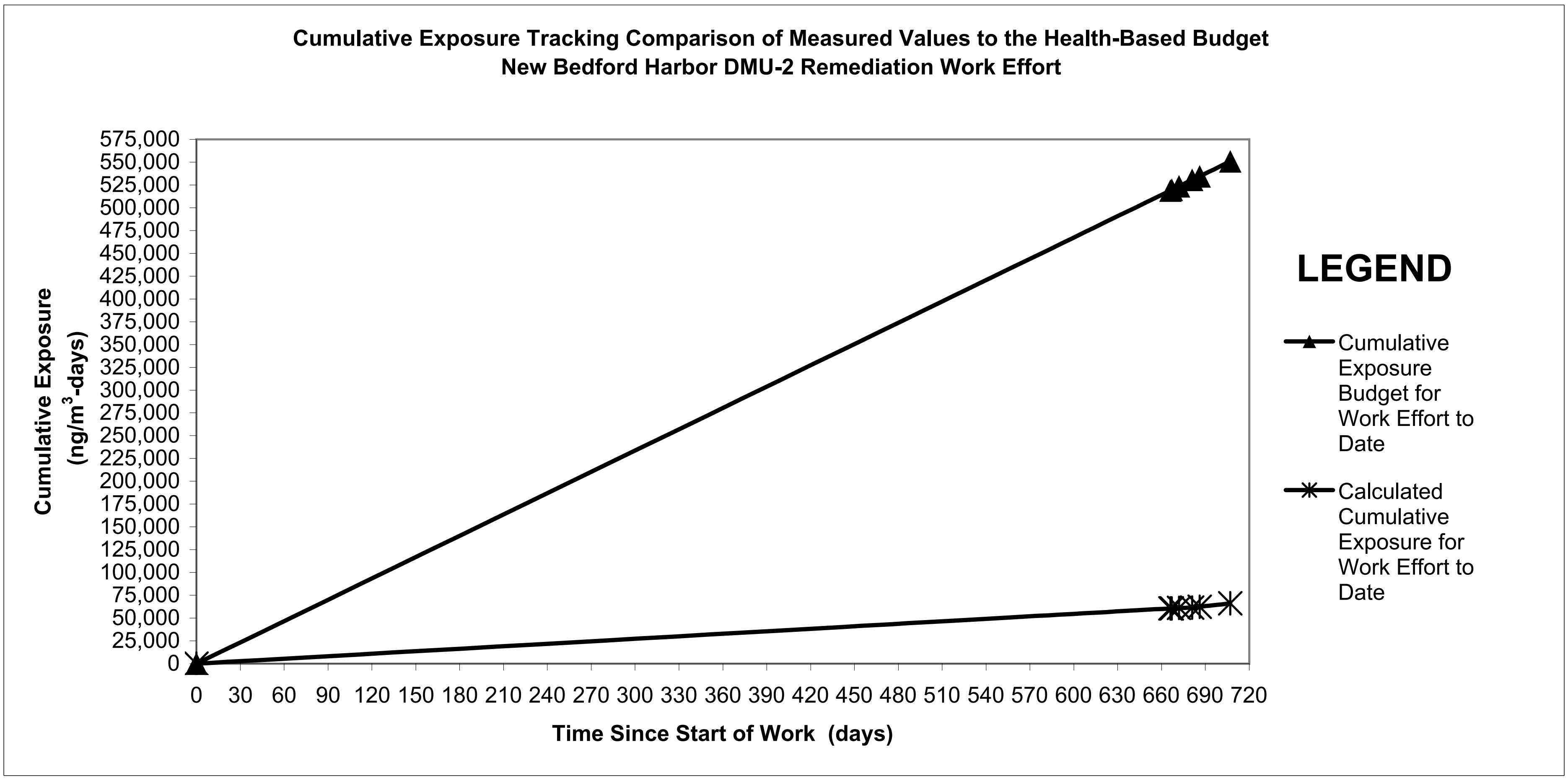
Monitoring Station		46 Coffin Ave
Exposure Budget Slope		779
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	115

Air Sampling Status Report

Sample Station :	46 Coffin Ave
Collection Date:	10/19/2004
Measured PCB Concentration (ng/m^3):	36
Exposure Budget Expended During This Period:	24.3%
Cumulative Exposure Budget Expended to Date:	12.0%
Response Level:	No Triggers Identified
Response:	No Response Necessary

Triggers:

Low



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 47 Area C Downwind
Exposure Budget Slope (EBS) = 734 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

No triggers were identified therefore no response is necessary.

Home Sheet

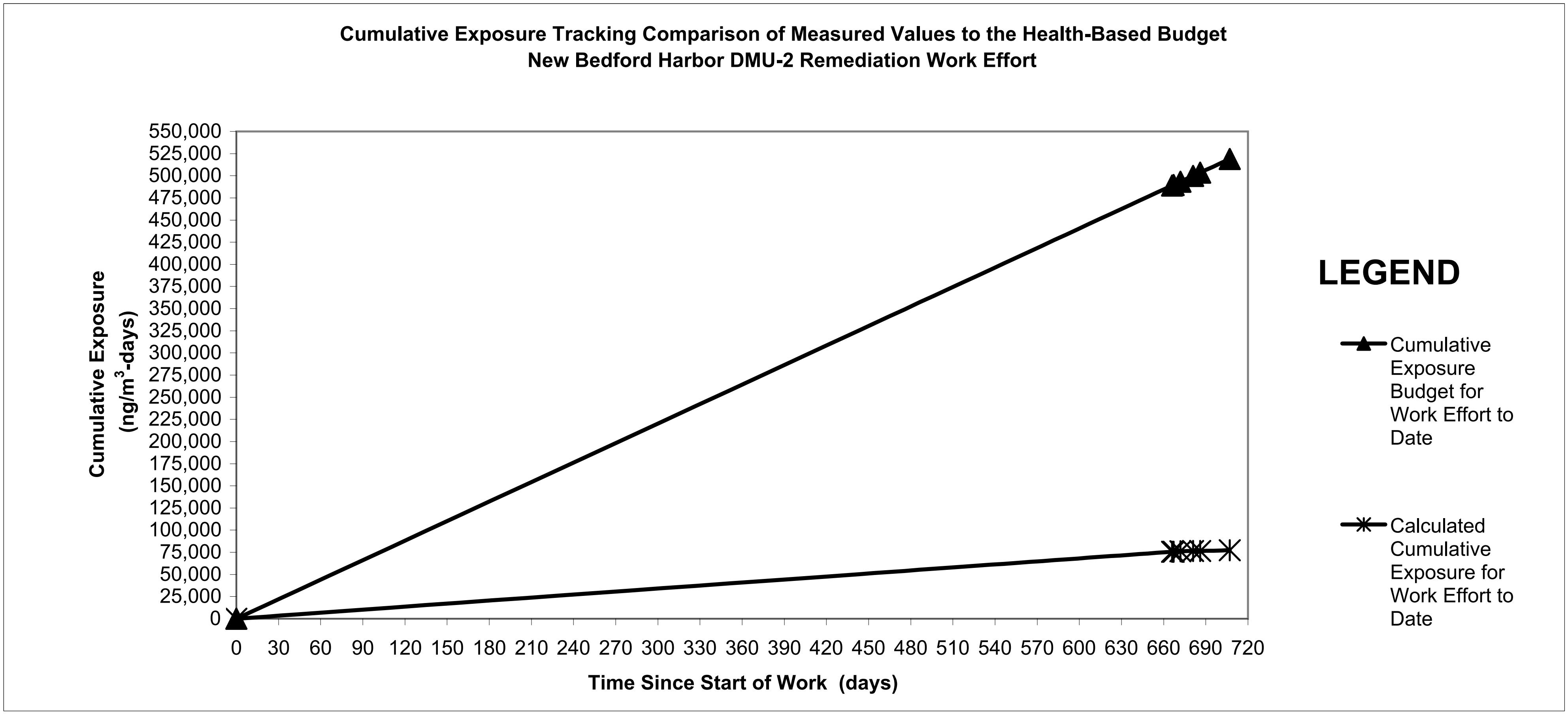
Monitoring Station		47 Area C Downwind
Exposure Budget Slope		734
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	160

Air Sampling Status Report

Sample Station : 47 Area C Downwind
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 47
Exposure Budget Expended During This Period: 5.6%
Cumulative Exposure Budget Expended to Date: 14.9%
Response Level: No Triggers Identified
Response: No Response Necessary

Triggers:

Low



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 48 Area C Crosswind
Exposure Budget Slope (EBS) = 734 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

No triggers were identified therefore no response is necessary.

Home Sheet

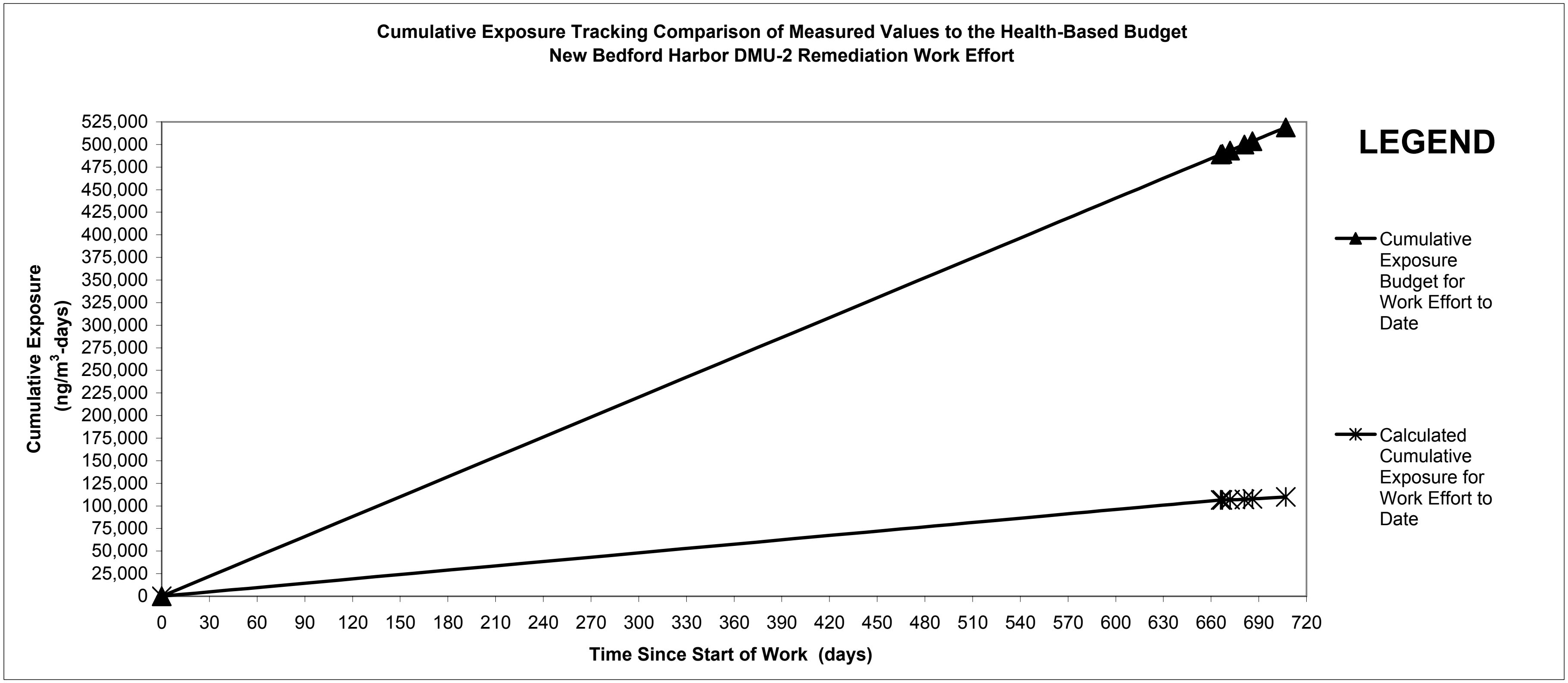
Monitoring Station		48 Area C Crosswind
Exposure Budget Slope		734
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	160

Air Sampling Status Report

Sample Station :	48 Area C Crosswind
Collection Date:	10/19/2004
Measured PCB Concentration (ng/m^3):	48
Exposure Budget Expended During This Period:	14.5%
Cumulative Exposure Budget Expended to Date:	21.2%
Response Level:	No Triggers Identified
Response:	No Response Necessary

Triggers:

Low



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 49 Area C Upwind
Exposure Budget Slope (EBS) = 734 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

No triggers were identified therefore no response is necessary.

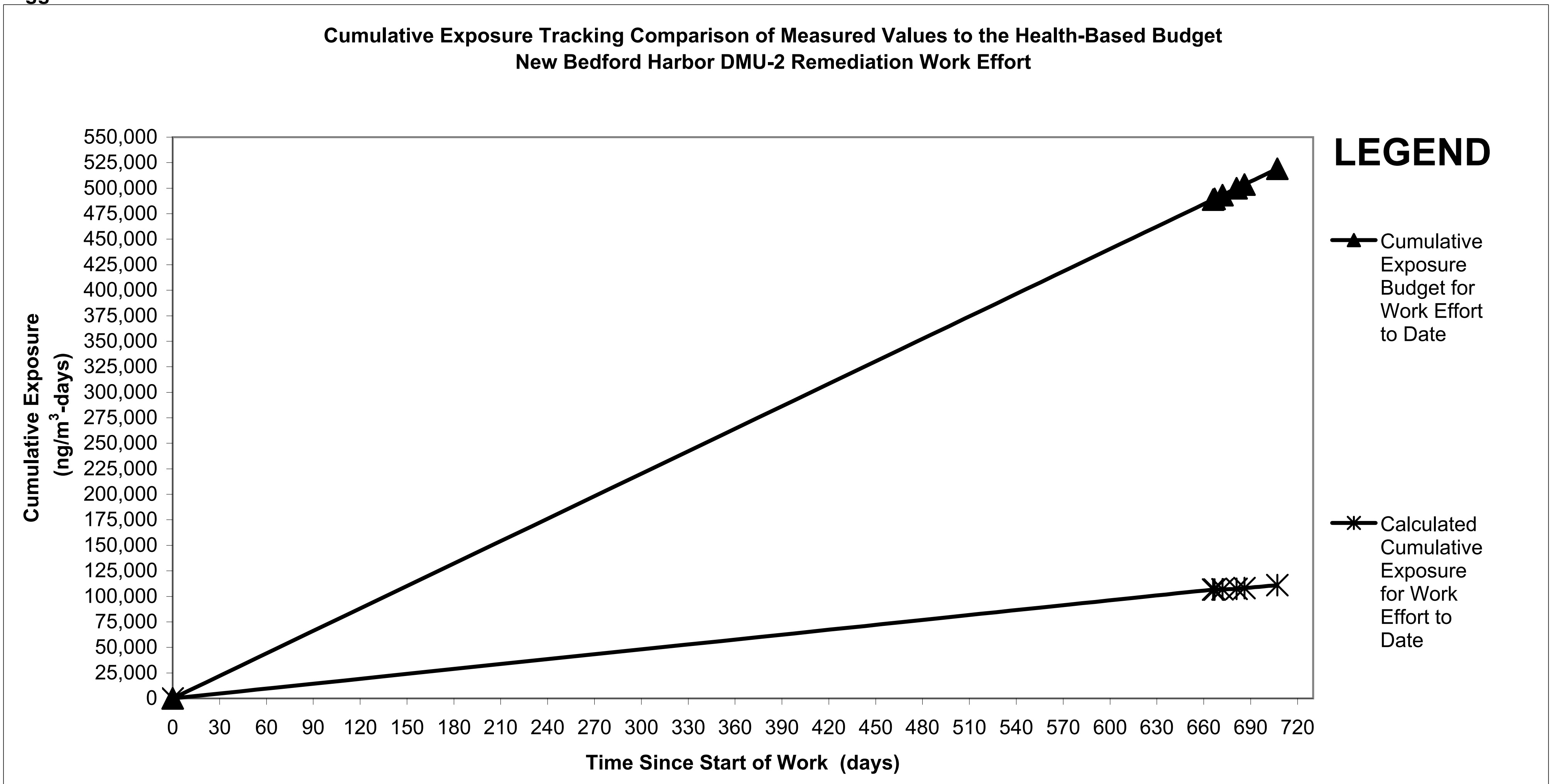
Home Sheet

Monitoring Station		49 Area C Upwind
Exposure Budget Slope		734
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	160

Air Sampling Status Report

Sample Station : 49 Area C Upwind
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 66
Exposure Budget Expended During This Period: 18.6%
Cumulative Exposure Budget Expended to Date: 21.4%
Response Level: No Triggers Identified
Response: No Response Necessary

Triggers:



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 50 Area D Downwind
Exposure Budget Slope (EBS) = 874 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

No triggers were identified therefore no response is necessary.

Home Sheet

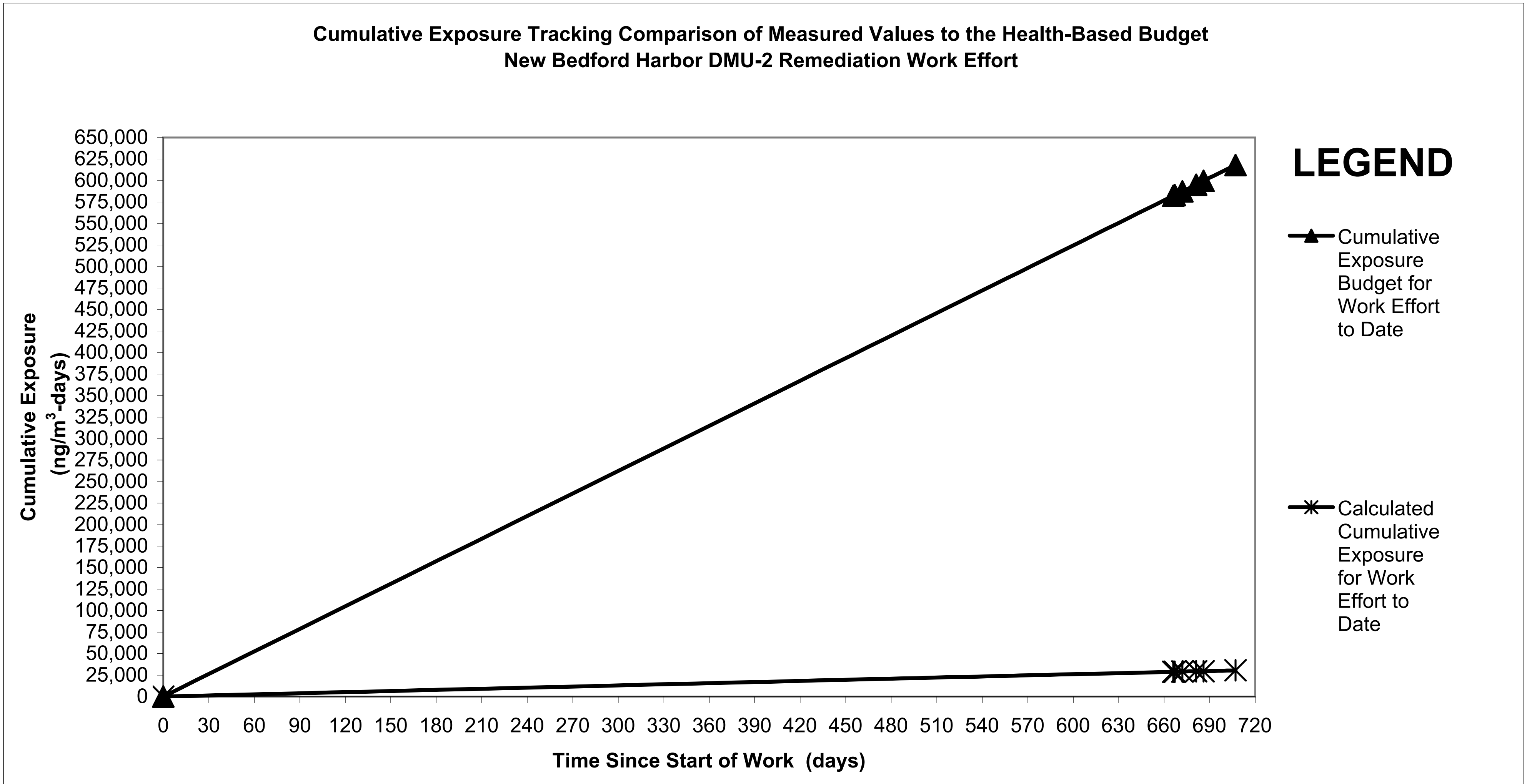
Monitoring Station		50 Area D Downwind
Exposure Budget Slope		874
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	20

Air Sampling Status Report

Sample Station : 50
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 17
Exposure Budget Expended During This Period: 5.5%
Cumulative Exposure Budget Expended to Date: 4.9%
Response Level: No Triggers Identified
Response: No Response Necessary

Triggers:

Low



35BG0103
1/7/2005

50 Area D Downwind (10-19-04)

Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 51 Area D Crosswind
Exposure Budget Slope (EBS) = 874 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

C5 and C6 concentration triggers were identified during this sampling period. These triggering conditions indicate a low response level with the response being to evaluate the cause and significance of the triggering conditions. The higher total PCB concentration observed at the sampling station during this period was probably caused by a combination of the higher ambient temperature, calm winds directed toward the station and a relatively high background concentration. Since the expenditure of the cumulative exposure budget to date was still at a low level at this point in the project, no change in field procedures is warranted.

Home Sheet

Monitoring Station		51 Area D Crosswind
Exposure Budget Slope		874
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	20

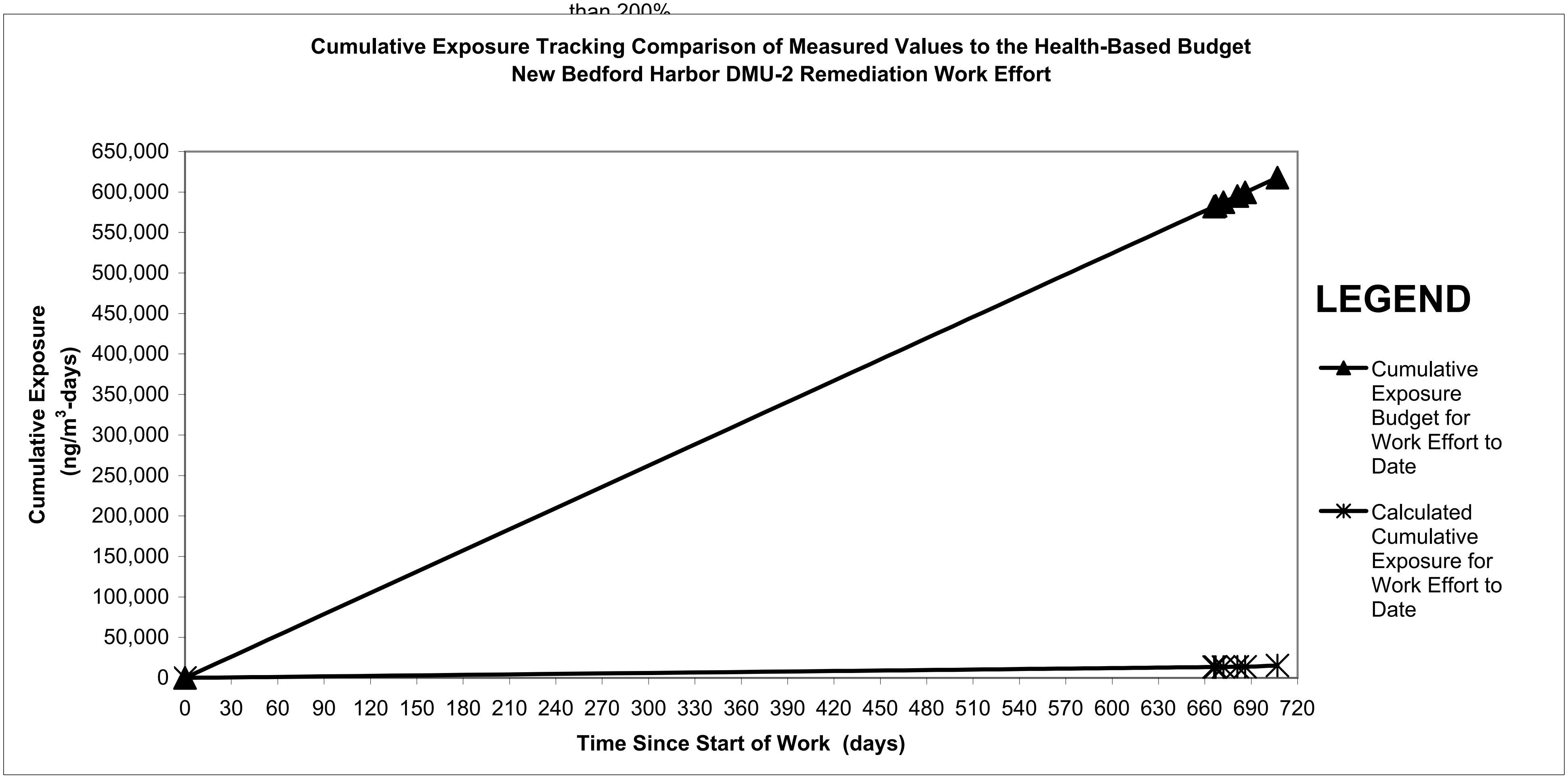
Air Sampling Status Report

Sample Station : 51 Area D Crosswind
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 74
Exposure Budget Expended During This Period: 8.5%
Cumulative Exposure Budget Expended to Date: 2.5%
Response Level: LOW
Response: Evaluate the Cause and Significance of the Triggering Conditions

Triggers:

Low

Trigger C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%



35BG0103
1/7/2005

Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 52 Area D Upwind
Exposure Budget Slope (EBS) = 874 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and subsequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

C5 and C6 concentration triggers were identified during this sampling period. These triggering conditions indicate a low response level with the response being to evaluate the cause and significance of the triggering conditions. The higher total PCB concentration observed at the sampling station during this period was probably caused by a combination of the higher ambient temperature, calm winds directed toward the station and a relatively high background concentration. Since the expenditure of the cumulative exposure budget to date was still at a low level at this point in the project, no change in field procedures is warranted.

Home Sheet

Monitoring Station		52 Area D Upwind
Exposure Budget Slope		874
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	20

Air Sampling Status Report

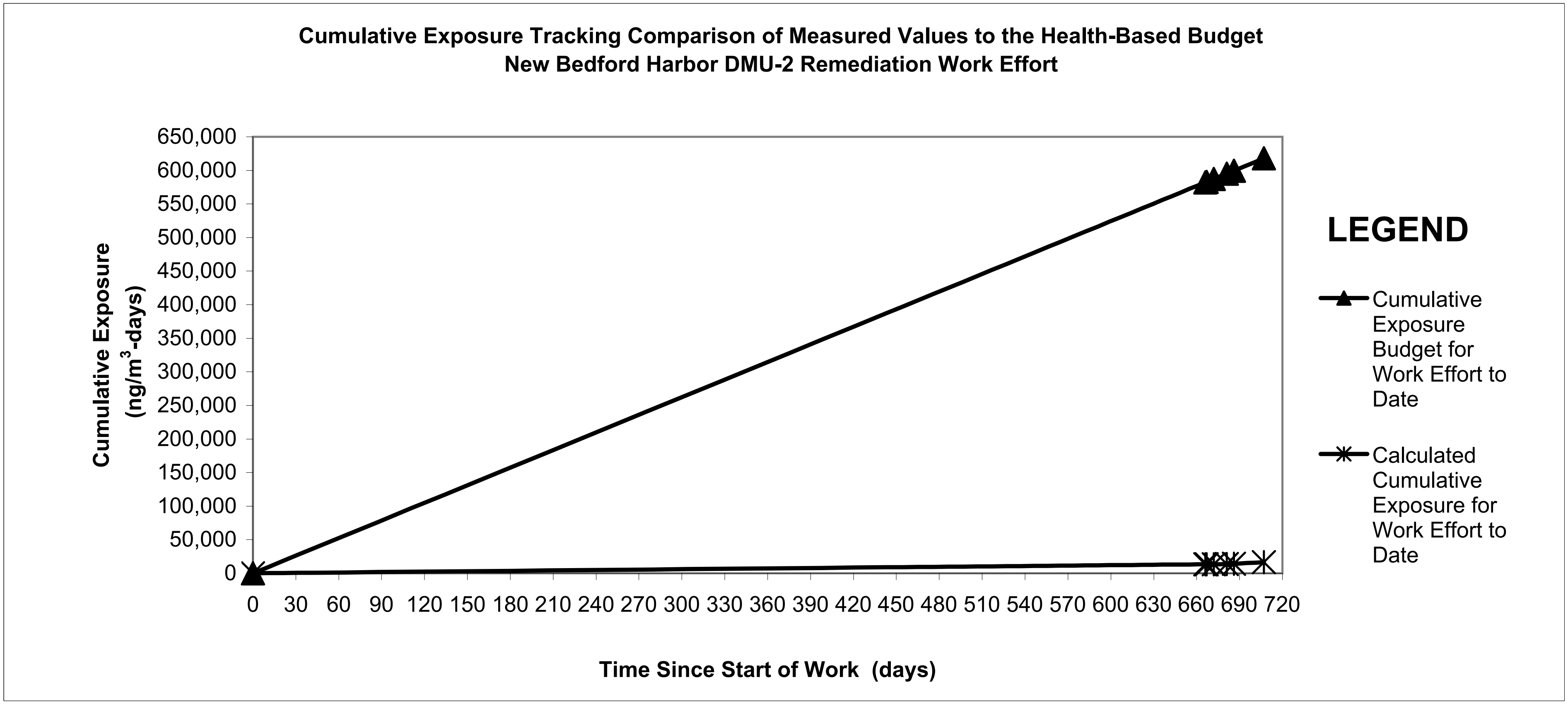
Sample Station : 52 Area D Upwind
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 100
Exposure Budget Expended During This Period: 12.3%
Cumulative Exposure Budget Expended to Date: 2.7%
Response Level: LOW
Response: Evaluate the Cause and Significance of the Triggering Conditions

Triggers:

Low

Trigger C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%

Trigger C6: Previous Two Measured Concentrations Exceed the Running Average Concentration



Air Sampling Status

New Bedford Harbor Superfund Site

Station #: 53 Dredge
Exposure Budget Slope (EBS) = 669 (ng/m^3-day)

Collection Date: 10/19/2004

Construction Activity: Dredging of DMU-2 and susequent treatment of slurry by desanding, dewatering and waste water treament operations.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 2 and 3. Sample Station Information is summarized in attached Table 1 and illustrated on Figure 1. Air concentration trigger information is presented in attached Table 2.

Summary of This Sampling Period:

C5 and C6 concentration triggers were identified during this sampling period. These triggering conditions indicate a low response level with the response being to evaluate the cause and significance of the triggering conditions. The higher total PCB concentration observed at the sampling station during this period was probably caused by a combination of the higher ambient temperature, calm winds directed toward the station and a relatively high background concentration. Since the expenditure of the cumulative exposure budget to date was still at a low level at this point in the project, no change in field procedures is warranted.

Home Sheet

Monitoring Station		53 Dredge
Exposure Budget Slope		669
Work Start Date		11/12/2002
Projected Work End Date		11/10/2012
Occupational Limit Used as Ceiling	[ng/m^3]	500,000
TEL for Worker in Public	[ng/m^3]	50,000
NTEL for Worker in Public	[ng/m^3]	1,789
Miniumum of TEL/NTEL	[ng/m^3]	1,789
Background Concentration	[ng/m^3]	230

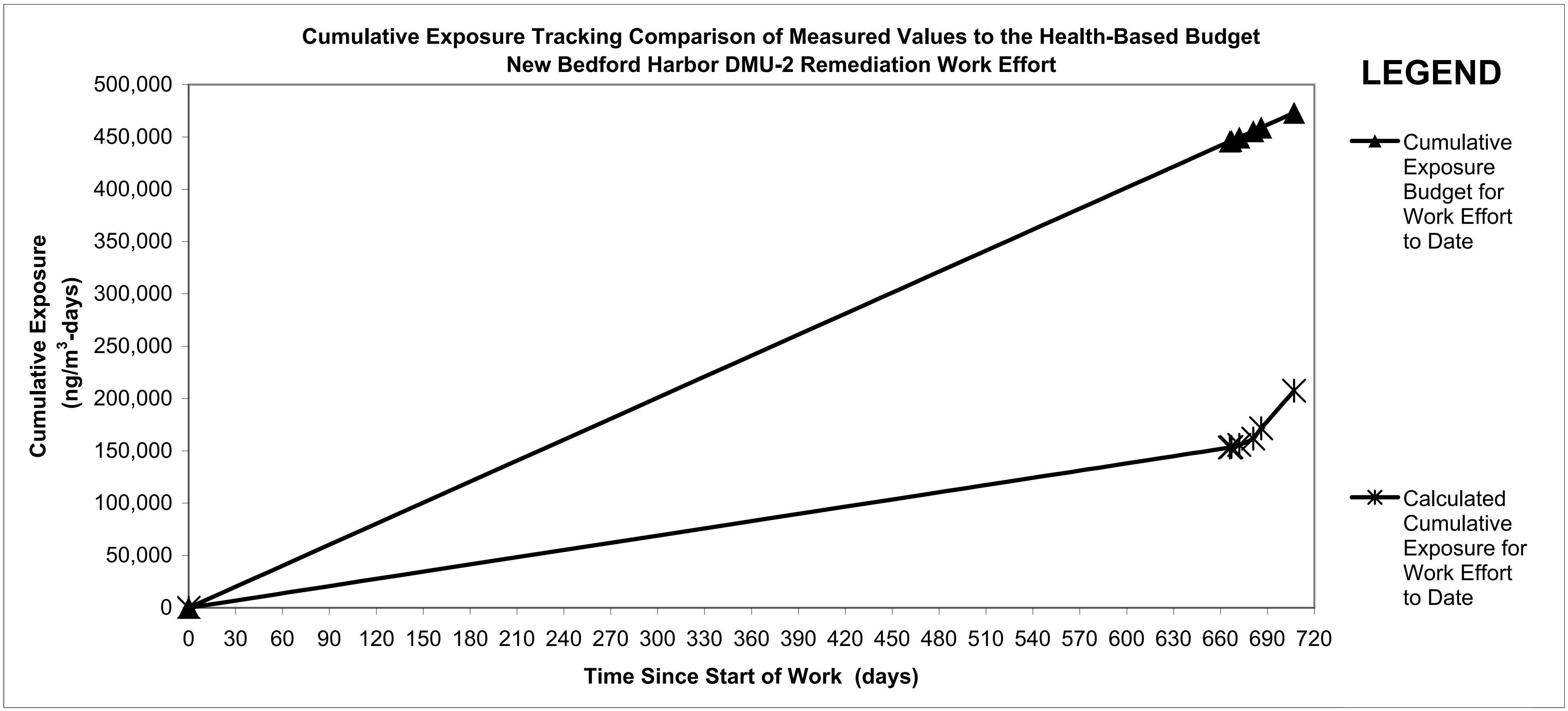
Air Sampling Status Report

Sample Station : 53 Dredge
Collection Date: 10/19/2004
Measured PCB Concentration (ng/m^3): 704
Exposure Budget Expended During This Period: 257.0%
Cumulative Exposure Budget Expended to Date: 43.9%
Response Level: LOW
Response: Evaluate the Cause and Significance of the Triggering Conditions

Triggers:

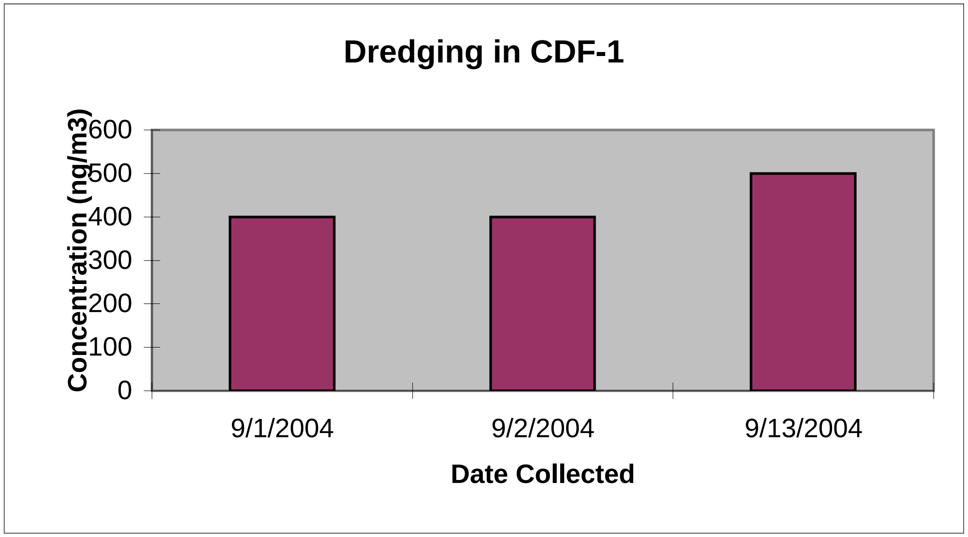
Low

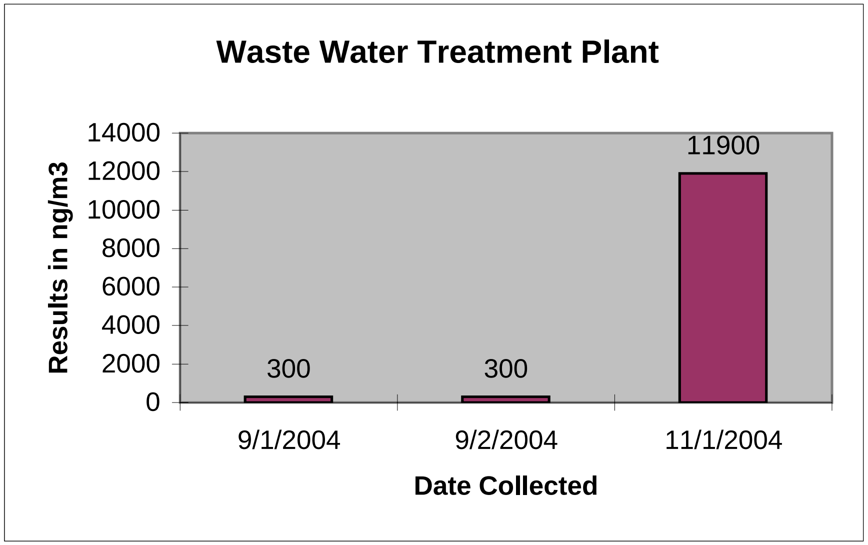
Trigger C5: Measured Concentration Exceeds the Annual Average Background Concentration by more than 200%
Trigger C6: Previous Two Measured Concentrations Exceed the Running Average Concentration

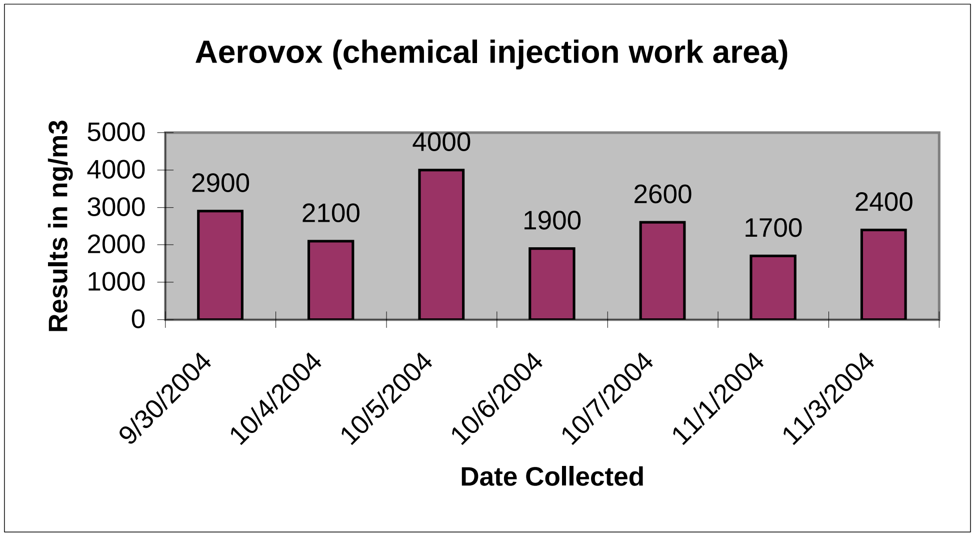


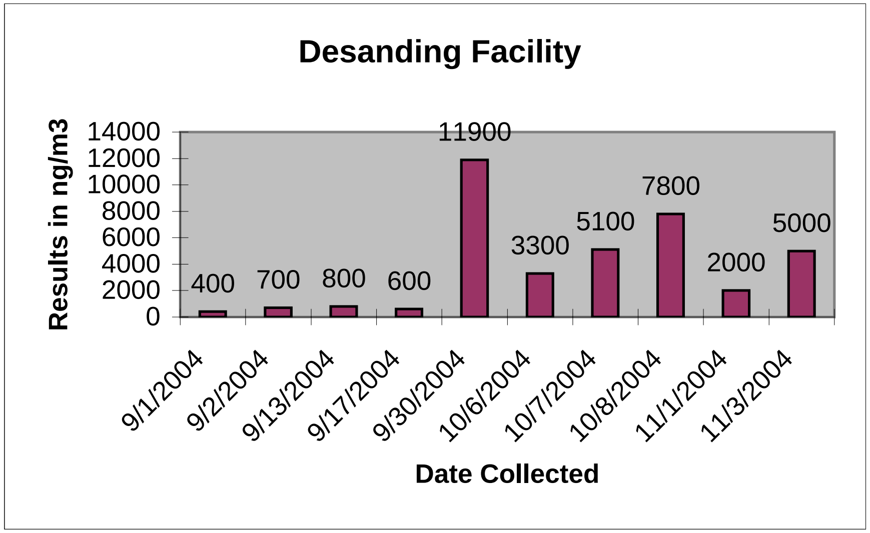
1/7/2005

PCB Personal Integrated
Sample Results

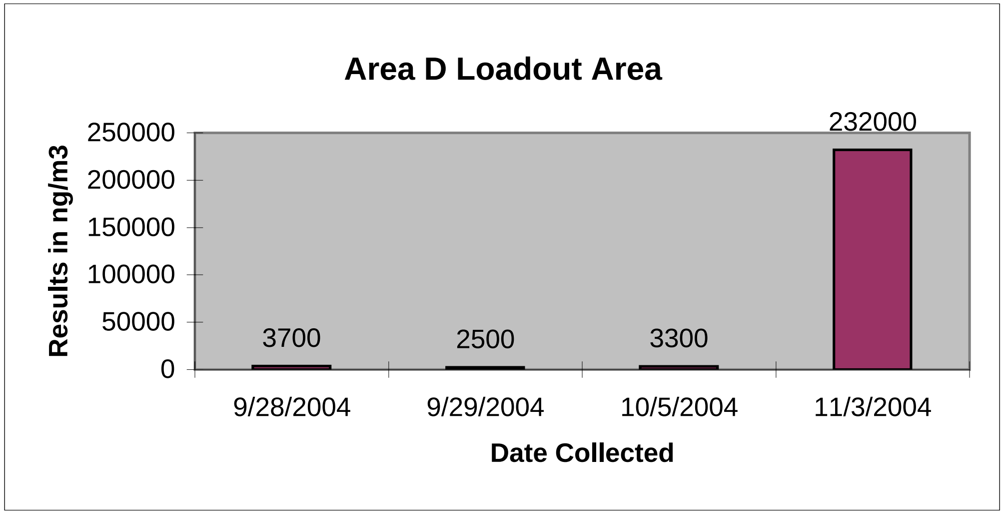


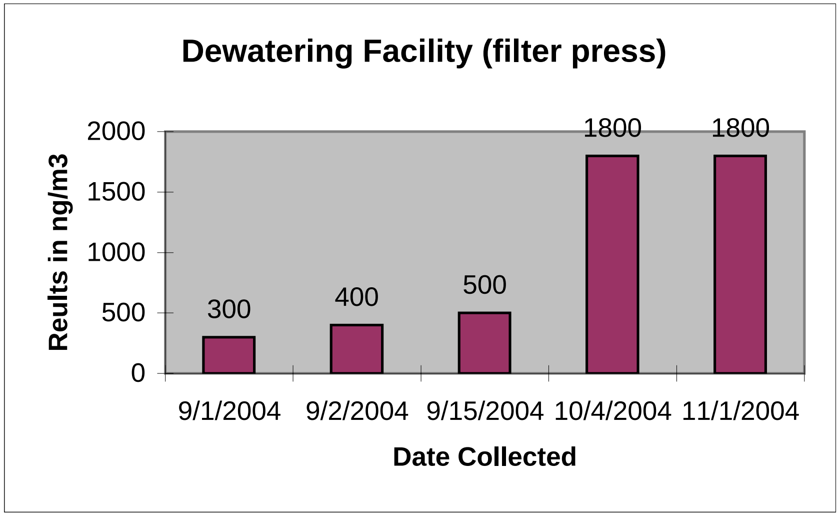


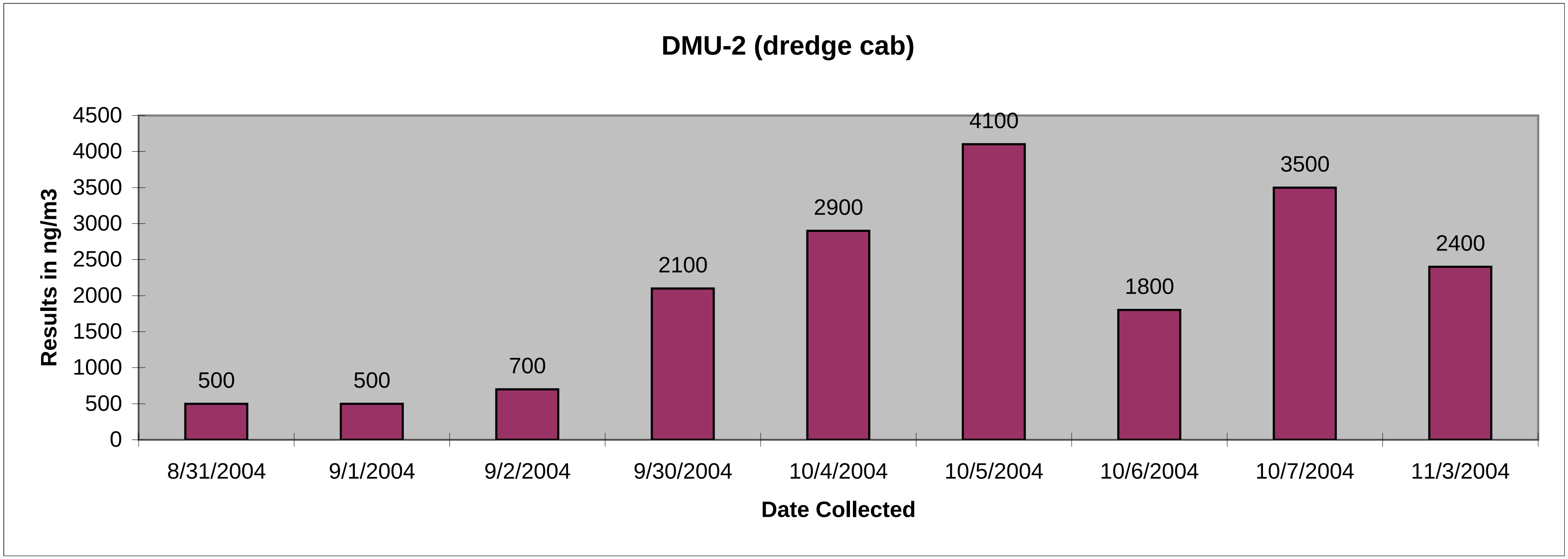




**PCB Personal Integrated
Sample Results**







ATTACHMENT J

Sample Summary Tables

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
9/9/2004	9/9/2004	SED1-090904	NB-A000701	Characterize Dredge Material with high H_2S	N/A	Total Sulfide	24 hour		
PCBs and Total Metals Analysis (Desanding Plant Material - Area C)									
9/10/2004	9/10/2004	V1-091004	NB-A000801	Characterize **Desanding Plant Material** Dredged from **CDF**	Estimated **150 Tons**	PCBs and Total Metals	24 hour	**Total PCBs - 18.3 mg/kg**	**Total PCBs - 18.3 J mg/kg**
9/22/2004	9/22/2004	V1-092204	NB-A002001	Characterize **Desanding Plant Material** Dredged from **CDF**	**282 tons** of material dredged from CDF. Moved to DDA on 9/21/04	PCBs and Total Metals	14 day		**Total PCBs - 9.0 J mg/kg**
9/22/2004	9/22/2004	V1-092204A	NB-A002002	Characterize **Desanding Plant Material** Dredged from **CDF**	**282 tons** of material dredged from CDF. Moved to DDA on 9/21/04	PCBs and Total Metals	14 day		**Total PCBs - 14.3 J mg/kg**
9/27/2004	9/27/2004	V1-092704-A	NB-A002501	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**126 Tons** of material from DMU-2. Moved to DDA on 10/01/04	PCBs and Total Metals	24 hour	**Total PCBs - 112 mg/kg**	**Total PCBs - 108 mg/kg**
10/4/2004	10/4/2004	V1-100404	NB-A002901	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**159 tons** since last sample. Moved to DDA on 10/6/04	PCBs and Total Metals	24 hour	**Total PCBs - 124 mg/kg**	**Total PCBs - 142 mg/kg**
10/6/2004	10/6/2004	V1-100604	NB-A003301	Characterize sand from **Desanding Plant** Material Dredged from DMU-2	**95 tons** since last sample. Moved to DDA on 10/8/04	PCBs and Total Metals	24 hour	**Total PCBs - 148 mg/kg**	**Total PCBs - 168 J mg/kg**
10/11/2004	10/11/2004	V1-101104	NB-A003901	Characterize **Desanding Plant** Material Dredged from DMU-2	**177 tons** since last sample. Moved to DDA on 10/14/04	PCBs and Total Metals	24 hour	**Total PCBs - 117 mg/kg**	**Total PCBs - 125 mg/kg**
10/11/2004	10/13/2004	V1-101104-A	NB-A004301	A split of DMU-2 sample collected on 10/11/04 and sieved. The sample consists of greater than No. 200 sieve material	**177 tons** since last sample. Moved to DDA on 10/14/04	PCBs and Total Metals	24 hour	**Total PCBs - 48 mg/kg**	**Total PCBs - 66 mg/kg**
10/13/2004	10/13/2004	V1-101304	NB-A004601	Characterize **Desanding Plant** Material Dredged from DMU-2	**130 tons** since last sample. Moved to DDA on 10/15/04	PCBs and Total Metals	24 hour	**Total PCBs - 81 mg/kg**	**Total PCBs - 109 mg/kg**

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
10/20/2004	10/20/2004	V1-102004	NB-A005101	Characterize **Desanding Plant** Material Dredged from DMU-2	**183 tons** since last sample. Moved to DDA on 10/22/04	PCBs and Total Metals	24 hour	**Total PCBs - 235 mg/kg**	**Total PCBs - 235 mg/kg**
10/27/2004	10/27/2004	V1-102704	NB-A006001	Characterize **Desanding Plant** Material Dredged from DMU-2	**162 tons** since last sample. Moved to DDA on 11/01/04	PCBs and Total Metals	24 hour	**Total PCBs - 112 mg/kg**	**Total PCBs - 132 J mg/kg**
10/27/2004	10/29/2004	V1-102704-40	NB-A006701	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that is retained on No. 40 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	PCBs, Total Metals, and Total Organics	5 day	**Total PCBs - 198 J mg/kg and Total Organics (organic matter - 4.6 percent and ash content - 95.4 percent)**	**Total PCBs - 283 J mg/kg and Total Organics (organic matter - 4.6 percent and ash content - 95.4 percent)**
10/27/2004	10/29/2004	V1-102704-100	NB-A006702	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that passes the No. 40 Sieve and is retained on No. 100 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	PCBs, Total Metals, and Total Organics	5 day	**Total PCBs - 59 J mg/kg and Total Organics (organic matter - 1.2 percent and ash content - 98.8 percent)**	**Total PCBs - 75 J mg/kg and Total Organics (organic matter - 1.2 percent and ash content - 98.8 percent)**
10/27/2004	10/29/2004	V1-102704-200	NB-A006703	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	PCBs, Total Metals, and Total Organics	5 day	**Total PCBs - 75 mg/kg and Total Organics (organic matter - 0.8 percent and ash content - 99.2 percent)**	**Total PCBs - 96 mg/kg and Total Organics (organic matter - 0.8 percent and ash content - 99.2 percent)**
11/3/2004	11/3/2004	V1-110304	NB-A007201	Characterize **Desanding Plant** Material Dredged from DMU-2	**148 tons** since last sample. Moved to DDA on 11/08/04	PCBs and Total Metals	24 hour	**Total PCBs - 121 mg/kg**	**Total PCBs - 142 J mg/kg**

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
11/3/2004	11/4/2004	V1-110304-40	NB-A007601	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that is retained on No. 40 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 96 mg/kg, TOC (Lloyd Kahn) - 38,900 mg/kg, Total Organics (organic matter - 4.5 percent and Ash Content 95.5 percent)**	**Total PCBs - 83 mg/kg, TOC (Lloyd Kahn) - 38,900 mg/kg, Total Organics (organic matter - 4.5 percent and Ash Content 95.5 percent)**
11/3/2004	11/4/2004	V1-110304-100	NB-A007602	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 70 mg/kg, TOC (Lloyd Kahn) - 13,300 mg/kg, Total Organics (organic matter - 0.7 percent and Ash Content 99.3 percent)**	**Total PCBs - 62 mg/kg, TOC (Lloyd Kahn) - 13,300 mg/kg, Total Organics (organic matter - 0.7 percent and Ash Content 99.3 percent)**
11/3/2004	11/4/2004	V1-110304-200	NB-A007603	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 54 mg/kg, TOC (Lloyd Kahn) - 4,030 mg/kg, Total Organics (organic matter - 1.2 percent and Ash Content 98.8 percent)**	**Total PCBs - 51 mg/kg, TOC (Lloyd Kahn) - 4,030 mg/kg, Total Organics (organic matter - 1.2 percent and Ash Content 98.8 percent)**
11/10/2004	11/10/2004	V1-111004	NB-A008101	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**148 tons** since last sample. Moved to DDA on 11/12/04	PCBs and Total Metals	24 hour	**Total PCBs - 36.2 J mg/kg**	**Total PCBs - 36.2 J mg/kg**

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
11/10/2004	11/10/2004	V1-111004-40	NB-A008401	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that is retained on No. 40 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 27.7 J mg/kg**	**Total PCBs - 27.7 J mg/kg; TOC (Lloyd Kahn) - 13,200 mg/kg; Total Organics (organic matter - 3.7 percent and Ash Content - 96.3 percent)**
11/10/2004	11/10/2004	V1-111004-100	NB-A008402	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 18.8 J mg/kg**	**Total PCBs - 18.8 J mg/kg; TOC (Lloyd Kahn) - 2,810 mg/kg; Total Organics (organic matter 0.7 percent and Ash Content 99.3 percent)**
11/10/2004	11/10/2004	V1-111004-200	NB-A008403	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	PCBs, Total Metals, Total Organics, and TOC	5 day	**Total PCBs - 21.8 J mg/kg**	**Total PCBs - 21.8 J mg/kg; TOC (Lloyd Kahn) - 2,840 mg/kg; Total Organics (organic matter 0.6 percent and Ash Content 99.4 percent)**
PCBs and Total Metals Analysis (Dewatering Plant Material - Area D)									
9/16/2004	9/16/2004	V2-091604	NB-A001201	Characterize **Filter Cake** Dredged From the **CDF**	Collected at cumulative **207 Tons** (from previous day)	PCBs and Total Metals	14 day	**Total PCBs - 133 mg/kg**	**Total PCBs - 133 mg/kg**
10/1/2004	10/4/2004	V2-100104	NB-A002701	Characterize **Filter Cake** from **DMU-2**	**983 tons** of Material (including CDF Material), from previous day	PCBs and Total Metals	14 Day	**Total PCBs - 1070 J mg/kg**	**Total PCBs - 1070 J mg/kg**
10/5/2004	10/6/2004	V2-100504	NB-A003101	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **1,504 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 790 J mg/kg**	**Total PCBs - 790 J mg/kg**

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
10/7/2004	10/11/2004	V2-100704	NB-A003701	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **2,426 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day		**Total PCBs - 450 mg/kg**
10/12/2004	10/13/2004	V2-101204	NB-A004401	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **2,871 tons** of filter cake at the start of the day	PCBs and Total Metals	14 Day	**Total PCBs - 148 mg/kg**	**Total PCBs - 248 mg/kg**
10/19/2004	10/20/2004	V2-101904	NB-A005301	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **3,729 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 1,000 mg/kg**	**Total PCBs - 1,650 mg/kg**
10/22/2004	10/25/2004	V2-102204	NB-A005801	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **4,586 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 1,270 J mg/kg**	**Total PCBs - 1,270 J mg/kg**
10/27/2004	10/29/2004	V2-102704	NB-A006301	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **5,216 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 1,180 J mg/kg**	**Total PCBs - 1,180 J mg/kg**
11/2/2004	11/3/2004	V2-110204	NB-A006901	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **6,090 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 550 J mg/kg**	**Total PCBs - 550 J mg/kg**

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
11/8/2004	11/10/2004	V2-110804	NB-A007801	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **6,774 tons** of filter cake (previous day)	PCBs and Total Metals	14 Day	**Total PCBs - 171 J mg/kg**	**Total PCBs - 171 J mg/kg**
Oil and Grease Analysis (Desanding Plant Material - Area C)									
9/10/2004	9/13/2004	V1-091004	NB-A000901	Characterize **Desanding Plant Material** Dredged from **CDF**	Estimated **150 Tons**	Oil and Grease	24 hour	410 mg/kg	410 mg/kg
9/22/2004	9/22/2004	V1-092204	NB-A002101	Characterize **Desanding Plant Material** Dredged from **CDF**	**282 tons** of material dredged from CDF. Moved to DDA on 9/21/04	Oil and Grease	14 day	570 mg/kg	570 mg/kg
9/22/2004	9/22/2004	V1-092204A	NB-A002102	Characterize **Desanding Plant Material** Dredged from CDF	**282 tons** of material dredged from CDF. Moved to DDA on 9/21/04	Oil and Grease	24 hour	890 mg/kg	890 mg/kg
9/27/2004	9/27/2004	V1-092704-A	NB-A002601	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**126 Tons** of material from DMU-2. Moved to DDA on 10/01/04	Oil and Grease	24 hour	470 mg/kg	470 mg/kg
10/4/2004	10/4/2004	V1-100404	NB-A003001	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**159 tons** since last sample. Moved to DDA on 10/6/04	Oil and Grease	24 hour	1400 mg/kg	1400 mg/kg
10/6/2004	10/6/2004	V1-100604	NB-A003401	Characterize sand from **Desanding Plant** Material Dredged from DMU-2	**95 tons** since last sample. Moved to DDA on 10/08/04	Oil and Grease	24 hour	1600 mg/kg	1600 mg/kg
10/11/2004	10/11/2004	V1-101104	NB-A004001	Characterize **Desanding Plant** Material Dredged from DMU-2	**177 tons** since last sample. Moved to DDA on 10/14/04	Oil and Grease	24 hour	44000 mg/kg	1000 mg/kg

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
10/11/2004	10/13/2004	V1-101104-A	NB-A004201	A split of DMU-2 sample collected on 10/11/04 and sieved. The sample consists of greater than No. 200 sieve material	**177 tons** since last sample. Moved to DDA on 10/14/04	Oil and Grease	24 hour	850 mg/kg	850 mg/kg
10/13/2004	10/13/2004	V1-101304	NB-A004701	Characterize **Desanding Plant** Material Dredged from DMU-2	**130 tons** since last sample. Moved to DDA on 10/15/04	Oil and Grease	24 hour	1000 mg/kg	1000 mg/kg
10/20/2004	10/20/2004	V1-102004	NB-A005201	Characterize **Desanding Plant** Material Dredged from DMU-2	**183 tons** since last sample. Moved to DDA on 10/22/04	Oil and Grease	24 hour		3,600 mg/kg
10/27/2004	10/27/2004	V1-102704	NB-A006101	Characterize **Desanding Plant** Material Dredged from DMU-2	**162 tons** since last sample. Moved to DDA on 11/01/04	Oil and Grease	24 hour	1200 mg/kg	1200 mg/kg
10/27/2004	11/1/2004	V1-102704-40	NB-A006801	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006701. Represents fraction of sample that is retained on No. 40 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	Oil and Grease	5 day	580 mg/kg	580 mg/kg
10/27/2004	11/1/2004	V1-102704-100	NB-A006802	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006701. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	Oil and Grease	5 day	990 mg/kg	990 mg/kg

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
10/27/2004	11/1/2004	V1-102704-200	NB-A006803	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006701. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**162 tons** since last sample. Moved to DDA on 11/01/04	Oil and Grease	5 day	1600 mg/kg	1600 mg/kg
11/3/2004	11/3/2004	V1-110304	NB-A007301	Characterize **Desanding Plant** Material Dredged from DMU-2	**148 tons** since last sample. Moved to DDA on 11/08/04	Oil and Grease	24 hour	650 mg/kg	650 mg/kg
11/3/2004	11/4/2004	V1-110304-40	NB-A007701	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that is retained on No. 40 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	Oil and Grease	5 day	800 mg/kg	800 mg/kg
11/3/2004	11/4/2004	V1-110304-100	NB-A007702	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	Oil and Grease	5 day	< 530 mg/kg	< 530 mg/kg
11/3/2004	11/4/2004	V1-110304-200	NB-A007703	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**148 tons** since last sample. Moved to DDA on 11/08/04	Oil and Grease	5 day	< 430 mg/kg	< 430 mg/kg

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
11/10/2004	11/10/2004	V1-111004	NB-A008201	Characterize **Desanding Plant** Material Dredged from DMU-2	**148 tons** since last sample. Moved to DDA on 11/12/04	Oil and Grease	24 hour	< 450 mg/kg	< 450 mg/kg
11/10/2004	11/10/2004	V1-111004-40	NB-A008501	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008201. Represents fraction of sample that is retained on No. 40 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	Oil and Grease	5 day	< 480 mg/kg	< 480 mg/kg
11/10/2004	11/10/2004	V1-111004-100	NB-A008502	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008201. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	Oil and Grease	5 day	< 510 mg/kg	< 510 mg/kg
11/10/2004	11/10/2004	V1-111004-200	NB-A008503	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008201. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**148 tons** since last sample. Moved to DDA on 11/12/04	Oil and Grease	5 day	< 520 mg/kg	< 520 mg/kg
Oil and Grease Analysis (Dewater Plant Material - Area D)									
9/16/2004	9/16/2004	V2-091604	NB-A001301	Characterize **Filter Cake** Dredged From the **CDF**	Collected at cumulative **207 Tons** (from previous day)	Oil and Grease	14 day	4300 mg/kg	4300 mg/kg
10/1/2004	10/4/2004	V2-100104	NB-A002801	Characterize **Filter Cake** from **DMU-2**	**983 tons** of Material (including CDF Material), from previous day	Oil and Grease	14 Day	480 mg/kg	480 mg/kg

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
10/5/2004	10/6/2004	V2-100504	NB-A003201	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **1,504 tons** of filter cake (previous day)	Oil and Grease	14 Day		< 650 mg/kg
10/7/2004	10/11/2004	V2-100704	NB-A003801	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **2,426 tons** of filter cake (previous day)	Oil and Grease	14 Day		1400 mg/kg
10/12/2004	10/13/2004	V2-101204	NB-A004501	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **2,871 tons** of filter cake at the start of the day	Oil and Grease	14 Day	1700 mg/kg	1700 mg/kg
10/19/2004	10/20/2004	V2-101904	NB-A005401	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **3,729 tons** of filter cake (previous day)	Oil and Grease	14 Day		1200 mg/kg
10/22/2004	10/25/2004	V2-102204	NB-A005901	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **4,586 tons** of filter cake (previous day)	Oil and Grease	14 Day	1200 mg/kg	1200 mg/kg
10/27/2004	11/1/2004	V2-102704	NB-A006401	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **5,216 tons** of filter cake (previous day)	Oil and Grease	14 Day	3500 mg/kg	3500 mg/kg

Table J-1
Process Solids and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Number of Tons of Material When Sampled	Analysis	Turn Around Time (TAT) From Date Received by Lab	Preliminary Unvalidated Analytical Results	Final Unvalidated Analytical Results
11/2/2004	11/3/2004	V2-110204	NB-A007001	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **6,090 tons** of filter cake (previous day)	Oil and Grease	14 Day	1800 mg/kg	1800 mg/kg
11/8/2004	11/10/2004	V2-110804	NB-A007901	Characterize **Filter Cake** from DMU-2	Collected at Cumulative **6,774 tons** of filter cake (previous day)	Oil and Grease	14 Day	< 660 mg/kg	< 660 mg/kg
TCLP Analysis (Area C and D)									
9/27/2004	9/27/2004	V1-092704	NB-A002401	Characterize **Desanding Plant** Material Dredged from **DMU-2** for TCLP	**126 Tons** of material from DMU-2. Moved to DDA on 10/01/04	Full Suite TCLP	14 Day		
9/27/2004	9/27/2004	V2-092704	NB-A002402	Characterize **Filter Cake** Dredged From **DMU-2** for TCLP	**599 Tons** of Material (including CDF material)	Full Suite TCLP	14 Day		
10/15/2004	10/15/2004	V2-101504	NB-A005001	Characterize **Filter Cake** from CDF Material for TCLP Metals	Collected from the Portion of the Pile at Area D that was generated during CDF dredging	TCLP Metals only	Rush (approximately 3 day)		

Notes:
CDF = Confined Disposal Facility
DDA = Debris Disposal Area
DMU = Dredge Management Unit
J = estimated concentration
mg/kg = milligrams per kilogram
PCB = ploychlorinated biphenyl
TCLP = Toxicity Characteristic Leaching Procedure
TOC = total organic carbon

Table J-2
Sieve Samples Geotechnical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Sample ID	Control Number	Sample Type	Offsite or Onsite Analysis	Results Received	Sample Location	Number of Tons (Estimated Cumulative)	Percent of Sand (a)
9/8/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - CDF material	93	96.5 percent
9/15/2004	9/20/2004	V1-091504	NB-A001401	plastic bag	**Offsite (1)**	Yes	Desanding pile - CDF material	100	**89.3 percent**
9/15/2004	9/20/2004	V2-091504	NB-A001402	plastic bag	**Offsite (2)**	Yes	Filter Cake - CDF Material	216	**55.5 percent**
9/20/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - CDF material	250	92.7 percent
9/20/2004	9/23/2004	V1-092004	NB-A002201	5-gallon bucket	**Offsite (3)**	Yes	Influent - Coarse Shaker	N/A	**28.3 percent**
9/20/2004	9/23/2004	V2-092004	NB-A002202	5-gallon bucket	**Offsite (4)**	Yes	Effluent	N/A	**56.7 percent**
9/24/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material	126 (DMU-2)	77.4 percent
9/24/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D-DMU-2 material	538 Tons (both CDF and DMU-2)	11.9 percent
9/24/2004	9/27/2004	V1-092404	NB-A002301	plastic bag	**Offsite (5)**	Yes	Desanding pile - DMU-2 material	126 (DMU-2)	**88.7 percent**
9/24/2004	9/27/2004	V2-092404	NB-A002302	plastic bag	**Offsite (6)**	Yes	Filter Cake Area D - DMU-2	538 Tons (both CDF and DMU-2)	**25.5 percent**
9/28/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material	150 (DMU-2)	88.2 percent
9/28/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D - DMU-2. Collected in conjunction with Sample submitted for chemical analysis.	766	15.0 percent
9/28/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D - DMU-2	766	16.5 percent (duplicate)
10/1/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D - DMU-2	1,243	7.3 percent
10/4/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material	381 (DMU-2)	80.9 percent
10/4/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material	381 (DMU-2)	88.2 percent

Table J-2
Sieve Samples Geotechnical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Sample ID	Control Number	Sample Type	Offsite or Onsite Analysis	Results Received	Sample Location	Number of Tons (Estimated Cumulative)	Percent of Sand (a)
10/5/2004	10/6/2004	V1-100504	NB-A003501	plastic bag	**Offsite (7)**	No	Desanding pile - DMU-2 material - sample taken in conjunction with chemical sample collected on 10/4/04.	381 (DMU-2)	**88.2 percent**
10/5/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material - sample taken in conjunction with chemical sample collected on 10/4/04.	381 (DMU-2)	85.2 percent
10/5/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU-2 material - sample taken in conjunction with chemical sample collected on 10/4/04.	381 (DMU-2)	83.2 percent
10/5/2004	10/6/2004	V2-100504	NB-A003502	plastic bag	**Offsite (8)**	No	Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample at 1,263 tons	1,260	**19.5 percent**
10/5/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample at 1,263 tons	1,260	9.4 percent
10/5/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample at 1,263 tons	1,260	8.6 percent
10/11/2004	10/13/2004	V1-101104	NB-A004101	plastic bag	**Offsite (9)**	No	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/11/04	558 (DMU-2)	**86.9 percent**

Table J-2
Sieve Samples Geotechnical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Sample ID	Control Number	Sample Type	Offsite or Onsite Analysis	Results Received	Sample Location	Number of Tons (Estimated Cumulative)	Percent of Sand (a)
10/11/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/11/04	558 (DMU-2)	82.2 percent
10/11/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/11/04	558 (DMU-2)	87.88 percent
10/13/2004	10/13/2004	V1-101304	NB-A004801	plastic bag	**Offsite (10)**	No	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/13/04	688 (DMU-2)	**87.0 percent**
10/13/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/13/04	688 (DMU-2)	80.4 percent
10/13/2004	N/A	N/A	N/A	plastic bag	Onsite	N/A	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/13/04	688 (DMU-2)	83.1 percent
10/19/2004	10/20/2004	V2-101904	NB-A005601	plastic bag	**Offsite (12)**	No	Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample at 3,729 tons	3,729	17.2 percent sand and **Total Organics** (organic matter - 14.1 percent and ash content - 85.9 percent)

Table J-2
Sieve Samples Geotechnical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Sample ID	Control Number	Sample Type	Offsite or Onsite Analysis	Results Received	Sample Location	Number of Tons (Estimated Cumulative)	Percent of Sand (a)
10/20/2004	10/20/2004	V1-102004	NB-A005501	plastic bag	**Offsite (13)** and analysis for Total Carbon (D2974)	No	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/20/04	871 (DMU-2)	91.8 percent sand and **Total Organics** (organic matter - 2.8 percent and ash content - 97.2 percent)
10/27/2004	10/27/2004	V1-102704	NB-A006201	plastic bag	**Offsite (14)** and analysis for Total Carbon (D2974)		Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/27/04. In addition, sample was also submitted for percent organics (D2974)	1,033 (DMU-2)	89.3 percent sand and **Total Organics** (organic matter - 3.7 percent and ash content - 96.3 percent)
10/27/2004	10/29/2004	V2-102704	NB-A006601	plastic bag	**Offsite (15)**		Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample.	5,216	21.6 percent
11/3/2004	N/A	N/A	N/A	plastic bag	**onsite**		Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/13/04	1,181 (DMU-2)	81.0 percent
11/3/2004	N/A	N/A	N/A	plastic bag	**onsite**		Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 10/13/04	1,181 (DMU-2)	86.8 percent

Table J-2
Sieve Samples Geotechnical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Sample ID	Control Number	Sample Type	Offsite or Onsite Analysis	Results Received	Sample Location	Number of Tons (Estimated Cumulative)	Percent of Sand (a)
11/3/2004	11/3/2004	V1-110304	NB-A007401	plastic bag	**Offsite (16)** Analysis also for Total Carbon (D2974)		Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 11/03/04	1,181 (DMU-2)	90.1 percent sand and **Total Organics** (organic matter - 2.4 percent and ash content - 97.6 percent)
11/2/2003	11/3/2004	V2-110204	NB-A007101	plastic bag	**Offsite (16)** Analysis also for Total Carbon (D2974)		Filter Cake Area D - DMU-2 - sample taken in conjunction with chemical sample.	6,090	**14.1 percent**
11/8/2004	11/10/2004	V2-110804	NB-A008001	plastic bag	**offsite (17)**	No	Filter Cake Area D - DMU-2	6,774	**2.5 percent**
11/10/2004	11/10/2004	V1-111004	NB-A008301	plastic bag	**offsite (18)**	No	Desanding pile - DMU2 material sample taken in conjuction with chemical sample collected on 11/08/04	1,329 (DMU-2)	**89.5 percent**

Notes:
(a) The grain size results represent sand by dry weight.
CDF = Confined Disposal Facility
DMU = Dredge Management Unit
ID = identification
N/A = not applicable

Table J-3
Screened Materials Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Sample ID	Purpose of Sample	Preliminary Unvalidated PCB Results	Final Unvalidated PCB Results	Preliminary Unvalidated Oil and Grease Results	Final Unvalidated Oil and Grease Results	Grain Size Results (percent sand)	Total Organic and TOC Results
CDF Material								
9/10/2004	V1-091004	Characterize **Desanding Plant Material** Dredged from **CDF**	**Total PCBs - 18.3 mg/kg**	**Total PCBs - 18.3 J mg/kg**	410 mg/kg	410 mg/kg	96.5 (onsite)	**NS**
9/22/2004	V1-092204	Characterize **Desanding Plant Material** Dredged from **CDF**		**Total PCBs - 9.0 J mg/kg**	570 mg/kg	570 mg/kg	89.3 (offsite)	**NS**
9/22/2004	V1-092204A	Characterize **Desanding Plant Material** Dredged from **CDF**		**Total PCBs - 14.3 J mg/kg**	890 mg/kg	890 mg/kg	**NS**	**NS**
DMU-2 Material								
9/27/2004	V1-092704	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**Total PCBs - 112 mg/kg**	**Total PCBs - 108 mg/kg**	470 mg/kg	470 mg/kg	**NS**	**NS**
10/4/2004	V1-100404	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**Total PCBs - 124 mg/kg**	**Total PCBs - 142 mg/kg**	1400 mg/kg	1400 mg/kg	80.9 (onsite) 88.2 (onsite) and **88.2 (offsite)**	**NS**
10/6/2004	V1-100604	Characterize sand from **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 148 mg/kg**	**Total PCBs - 168 J mg/kg**	1600 mg/kg	1600 mg/kg	**NS**	**NS**
10/11/2004	V1-101104	Characterize **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 117 mg/kg**	**Total PCBs - 125 mg/kg**	44000 mg/kg	1000 mg/kg	82.2 percent (onsite), 87.88 percent (onsite), and **86.9 percent (offsite)**	**NS**
10/11/2004	V1-101104-A	A split of DMU-2 sample collected on 10/11/04 and sieved. The sample consists of greater than No. 200 sieve material	**Total PCBs - 48 mg/kg**	**Total PCBs - 66 mg/kg**	850 mg/kg	850 mg/kg	**NS**	**NS**
10/13/2004	V1-101304	Characterize **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 81 mg/kg**	**Total PCBs - 109 mg/kg**	1000 mg/kg	1000 mg/kg	80.4 percent (onsite), 83.1 percent (onsite), and 87.0 percent (offsite)	**NS**

Table J-3
Screened Materials Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Sample ID	Purpose of Sample	Preliminary Unvalidated PCB Results	Final Unvalidated PCB Results	Preliminary Unvalidated Oil and Grease Results	Final Unvalidated Oil and Grease Results	Grain Size Results (percent sand)	Total Organic and TOC Results
10/20/2004	V1-102004	Characterize **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 235 mg/kg**	**Total PCBs - 235 mg/kg**		3,600 mg/kg	91.8 percent sand	Total Organics (organic matter - 2.8 percent and ash content - 97.2 percent)
10/27/2004	V1-102704	Characterize **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 112 mg/kg**	**Total PCBs - 132 J mg/kg**	1200 mg/kg	1200 mg/kg	89.3 percent sand and	Total Organics (organic matter - 3.7 percent and ash content - 96.3 percent)
10/27/2004	V1-102704-40	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that is retained on No. 40 sieve	**Total PCBs - 198 J mg/kg**	**Total PCBs - 283 J mg/kg**	580 mg/kg	580 mg/kg	**NS**	Total Organics (organic matter - 4.6 percent and ash content - 95.4 percent)
10/27/2004	V1-102704-100	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that passes the No. 40 Sieve and is retained on No. 100 sieve	**Total PCBs - 59 J mg/kg**	**Total PCBs - 75 J mg/kg**	990 mg/kg	990 mg/kg	**NS**	Total Organics (organic matter - 1.2 percent and ash content - 98.8 percent)
10/27/2004	V1-102704-200	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A006001. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**Total PCBs - 75 mg/kg**	**Total PCBs - 96 mg/kg**	1600 mg/kg	1600 mg/kg	**NS**	Total Organics (organic matter - 0.8 percent and ash content - 99.2 percent)

Table J-3
Screened Materials Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Sample ID	Purpose of Sample	Preliminary Unvalidated PCB Results	Final Unvalidated PCB Results	Preliminary Unvalidated Oil and Grease Results	Final Unvalidated Oil and Grease Results	Grain Size Results (percent sand)	Total Organic and TOC Results
11/3/2004	V1-110304	Characterize **Desanding Plant** Material Dredged from DMU-2	**Total PCBs - 121 mg/kg**	**Total PCBs - 142 J mg/kg**	650 mg/kg	650 mg/kg	81.0 percent (onsite), 86.8 percent (onsite), and 90.1 percent sand	Total Organics (organic matter - 2.4 percent and ash content - 97.6 percent)
11/3/2004	V1-110304-40	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that is retained on No. 40 sieve	**Total PCBs - 96 mg/kg**	**Total PCBs - 83 mg/kg**	800 mg/kg	800 mg/kg	**NS**	TOC (Lloyd Kahn) - 38,900 mg/Kg, Total Organics (organic matter - 4.5 percent and Ash Content 95.5 percent)
11/3/2004	V1-110304-100	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	**Total PCBs - 70 mg/kg**	**Total PCBs - 62 mg/kg**	<530 mg/kg	<530 mg/kg	**NS**	TOC (Lloyd Kahn) - 13,300 mg/Kg, Total Organics (organic matter - 0.7 percent and Ash Content 99.3 percent)
11/3/2004	V1-110304-200	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A007301. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	**Total PCBs - 54 mg/kg**	**Total PCBs - 51 mg/kg**	<430 mg/kg	<430 mg/kg	**NS**	TOC (Lloyd Kahn) - 4,030 mg/Kg, Total Organics (organic matter - 1.2 percent and Ash Content 98.8 percent)
11/10/2004	V1-111004	Characterize **Desanding Plant** Material Dredged from **DMU-2**	**Total PCBs - 36.2 J mg/kg**	**Total PCBs - 36.2 J mg/kg**	<450 mg/kg	<450 mg/kg	**89.5 percent (offsite)**	**NS**

Table J-3
Screened Materials Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Sample ID	Purpose of Sample	Preliminary Unvalidated PCB Results	Final Unvalidated PCB Results	Preliminary Unvalidated Oil and Grease Results	Final Unvalidated Oil and Grease Results	Grain Size Results (percent sand)	Total Organic and TOC Results
11/10/2004	V1-111004-40	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that is retained on No. 40 sieve	27.7 J mg/kg	27.7 J mg/kg	<480 J mg/kg	<480 J mg/kg	**NS**	**Total PCBs** - 27.7 J mg/Kg; **TOC (Lloyd Kahn)** - 13,200 mg/Kg; **Total Organics** (organic matter - 3.7 percent and Ash Content - 96.3 percent)
11/10/2004	V1-111004-100	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that passes the No. 40 sieve and is retained on No. 100 sieve	18.8 J mg/kg	18.8 J mg/kg	<510 mg/kg	<510 mg/kg	**NS**	**Total PCBs** - 18.8 J mg/Kg; **TOC (Lloyd Kahn)** - 2,810 mg/Kg; **Total Organics** (organic matter 0.7 percent and Ash Content 99.3 percent)
11/10/2004	V1-111004-200	Characterize **Desanding Plant** Material Dredged from DMU-2. Split of sample NB-A008101. Represents fraction of sample that passes the No. 100 sieve and is retained on No. 200 sieve	21.8J mg/kg	21.8J mg/kg	<520 mg/kg	<520 mg/kg	**NS**	**Total PCBs** - 21.8 J mg/Kg; **TOC (Lloyd Kahn)** - 2,840 mg/Kg; **Total Organics** (organic matter 0.6 percent and Ash Content 99.4 percent)

Notes:
CDF = Confined Disposal Facility
DMU = Dredge Management Unit
ID = identification
J = estimated concentration
mg/kg = milligrams per kilogram
NS - No sample submitted for Analysis
PCB = polychlorinated biphenyl
TOC = total organic carbon
The grain size results represent percent sand by dry weight

Table J-4
Filter Cake Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Location ID	Purpose of Sample	Preliminary Unvalidated PCB Analytical Results	Final Unvalidated PCB Analytical Results	Preliminary Unvalidated Oil and Grease Analytical Results	Final Unvalidated Oil and Grease Analytical Results	Grain Size Results (Percent Sand)
CDF Material							
9/16/2004	V2-091604	Characterize **Filter Cake** Dredged From the **CDF**	**Total PCBs - 133 mg/kg**	**Total PCBs - 133 mg/kg**	4300 mg/kg	4300 mg/kg	**55.5 percent (offsite)**
DMU-2 Material							
10/1/2004	V2-100104	Characterize **Filter Cake** from **DMU-2**	**Total PCBs - 1070 J mg/kg**	**Total PCBs - 1070 J mg/kg**	480 mg/kg	480 mg/kg	**7.3 percent (onsite)**
10/5/2004	V2-100504	Characterize **Filter Cake** from DMU-2	**Total PCBs - 790 J mg/kg**	**Total PCBs - 790 J mg/kg**		< 650 mg/kg	**19.5 percent (offsite)**, 9.4 percent (onsite), and 8.6 perecent (onsite)
10/7/2004	V2-100704	Characterize **Filter Cake** from DMU-2		**Total PCBs - 450 mg/kg**		1400 mg/kg	**NS**
10/12/2004	V2-101204	Characterize **Filter Cake** from DMU-2	**Total PCBs - 148 mg/kg**	**Total PCBs - 248 mg/kg**	1700 mg/kg	1700 mg/kg	**NS**
10/19/2004	V2-101904	Characterize **Filter Cake** from DMU-2	**Total PCBs - 1,000 mg/kg**	**Total PCBs - 1,650 mg/kg**		1200 mg/kg	**NS**

Table J-4
Filter Cake Data Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Location ID	Purpose of Sample	Preliminary Unvalidated PCB Analytical Results	Final Unvalidated PCB Analytical Results	Preliminary Unvalidated Oil and Grease Analytical Results	Final Unvalidated Oil and Grease Analytical Results	Grain Size Results (Percent Sand)
10/22/2004	V2-102204	Characterize **Filter Cake** from DMU-2	**Total PCBs - 1,270 J mg/kg**	**Total PCBs - 1,270 J mg/kg**	1200 mg/kg	1200 mg/kg	**NS**
10/27/2004	V2-102704	Characterize **Filter Cake** from DMU-2	**Total PCBs - 1,180 J mg/kg**	**Total PCBs - 1,180 J mg/kg**	3500 mg/kg	3500 mg/kg	**NS**
11/2/2004	V2-110204	Characterize **Filter Cake** from DMU-2	**Total PCBs - 550 J mg/kg**	**Total PCBs - 550 J mg/kg**	1800 mg/kg	1800 mg/kg	**14.1 percent (offsite)**
11/8/2004	V2-110804	Characterize **Filter Cake** from DMU-2	**Total PCBs - 171 J mg/kg**	**Total PCBs - 171 J mg/kg**	< 660 mg/kg	< 660 mg/kg	**2.5 percent (offsite)**

Notes:
CDF = Confined Disposal Facility
DMU = Dredge Management Unit
ID = identification
J = estimated concentration
mg/kg = milligrams per kilogram
NS - No sample submitted for Analysis
PCB = polychlorinated biphenyl
The grain size results represent percent sand by dry weight

Table J-5
Screened Materials and Filter Cake Summary
New Bedford Harbor Superfund Site 2004 Season

			DESANDING PLANT DATA			FILTER CAKE DATA		
Sample Date	**Sample ID**	**Purpose of Sample**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand) (a)**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand)**
CDF Material								
9/16/2004	V2-091604	Characterize Filter Cake Dredged From the CDF	NS	NS	NS	Total PCBs - 133 mg/kg	4300 mg/kg	55.5 percent
9/10/2004	V1-091004	Characterize Desanding Plant Material Dredged from CDF	Total PCBs - 18.3 J mg/kg	410 mg/kg	96.5 (onsite)	NS	NS	NS
9/22/2004	V1-092204	Characterize Desanding Plant Material Dredged from CDF	Total PCBs - 9.0 J mg/kg	570 mg/kg	89.3 (offsite)	NS	NS	NS
9/22/2004	V1-092204A	Characterize Desanding Plant Material Dredged from CDF	Total PCBs - 14.3 J mg/kg	890 mg/kg	NS	NS	NS	NS
DMU-2 Material								
9/27/2004	V1-091004	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 108 mg/kg	470 mg/kg	No Grain size sample submitted	NS	NS	NS
10/1/2004	V2-100104	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 1070 J mg/kg	480 mg/kg	7.3 percent (onsite)
10/4/2004	V1-100404	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 142 mg/kg	1400 mg/kg	80.9 percent (onsite) 88.2 percent (onsite) and 88.2 percent (offsite)	NS	NS	NS
10/5/2004	V2-100504	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 790 J mg/kg	< 650 mg/kg	19.5 percent (offsite), 9.4 percent (onsite), and 8.6 percent (onsite)
10/6/2004	V1-100604	Characterize sand from Desanding Plant Material Dredged from DMU-2	Total PCBs - 168 J mg/kg	1600 mg/kg	No Grain size sample submitted	NS	NS	NS
10/7/2004	V2-100704	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 450 mg/kg	1400 mg/kg	No grain size sample submitted

Table J-5
Screened Materials and Filter Cake Summary
New Bedford Harbor Superfund Site 2004 Season

			DESANDING PLANT DATA			FILTER CAKE DATA		
Sample Date	**Sample ID**	**Purpose of Sample**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand) (a)**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand)**
10/11/2004	V1-101104	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 125 mg/kg	1000 mg/kg	82.2 percent (onsite), 87.88 percent (onsite), and 86.9 percent (offsite)	NS	NS	NS
10/12/2004	V2-101204	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 248 mg/kg	1700 mg/kg	No grain size sample submitted
10/13/2004	V1-101304	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 109 mg/kg	1000 mg/kg	80.4 percent (onsite), 83.1 percent (onsite), and 87.0 percent (offsite)	NS	NS	NS
10/19/2004	V2-101904	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 1,650 mg/kg	1200 mg/kg	17.2 percent (offsite)
10/20/2004	V1-102004	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 235 mg/kg	3,600 mg/kg	91.8 percent sand and Total Organics (organic matter - 2.8 percent and ash content - 97.2 percent)	NS	NS	NS
10/22/2004	V2-102204	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 1,270 J mg/kg	1200 mg/kg	No grain size sample submitted
10/27/2004	V1-102704	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 132 J mg/kg	1200 mg/kg	89.3 percent sand and Total Organics (organic matter - 3.7 percent and ash content - 96.3 percent)	NS	NS	NS
10/27/2004	V2-102704	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 1,180 J mg/kg	3500 mg/kg	21.6 percent (offsite)
11/2/2004	V2-110204	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 550 J mg/kg	1800 mg/kg	14.1 percent (offsite)
11/3/2004	V1-110304	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 142 J mg/kg	650 mg/kg	81.0 percent (onsite), 86.8 percent (onsite), and 90.1 percent sand and Total Organics (organic matter - 2.4 percent and ash content - 97.6 percent)	NS	NS	NS

Table J-5
Screened Materials and Filter Cake Summary
New Bedford Harbor Superfund Site 2004 Season

			DESANDING PLANT DATA			FILTER CAKE DATA		
Sample Date	**Sample ID**	**Purpose of Sample**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand) (a)**	**Final Unvalidated PCB Results**	**Final Unvalidated Oil and Grease Results**	**Grain Size Results (Percent Sand)**
11/8/2004	V2-110804	Characterize Filter Cake from DMU-2	NS	NS	NS	Total PCBs - 171 J mg/kg	< 660 mg/kg	2.5 percent (offsite)
11/10/2004	V1-11104	Characterize Desanding Plant Material Dredged from DMU-2	Total PCBs - 36.2 J mg/kg	<450 mg/kg	89.5 percent (offsite)	NS	NS	NS

Notes:
(a) The grain size results represent percent sand by dry weight
CDF = Confined Disposal Facility
DMU = Dredge Management Unit
ID = identification
J = estimated concentration
mg/kg = milligrams per kilogram
NS - No sample submitted for Analysis
PCB = polychlorinated biphenyl

Table J-6
Wastewater Treatment Plant Sampling and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Analysis	Preliminary Unvalidated Analytical Results (µg/L)	Final Unvalidated Analytical Results (µg/L)
Effluent Samples Analysis							
First Week of Daily Sampling at CDF (Effluent)							
9/2/2004	9/3/2004	WTP-003-090204	NB-A000205	**Effluent Sample** - First day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.3	All PCBs <0.051 and Copper <2.3
9/3/2004	9/3/2004	WTP-003-090304	NB-A000301	**Effluent Sample** - Second day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.3	All PCBs <0.051 and Copper <2.3
9/8/2004	9/9/2004	WTP-003-090804	NB-A000405	**Effluent Sample** - Third day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.6	All PCBs <0.051 and Copper <2.6
9/9/2004	9/10/2004	WTP-003-090904	NB-A000501	**Effluent Sample** - Fourth day, First Week, CDF Sampling,	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.6	All PCBs <0.051 and Copper <2.6
9/9/2004	9/10/2004	WTP-003-090904	NB-A000503	**Effluent Sample** - Fourth day, First Week, CDF Sampling, Duplicate Sample	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.36	All PCBs <0.051 and Copper <2.36
9/10/2004	9/13/2004	WTP-003-091004	NB-A000605	**Effluent Sample** - fifth day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.3	All PCBs <0.051and Copper <2.3
9/2/2004	9/3/2004	WTP-003-090204	NB-A000206	**Effluent Sample** - First day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr = 1.6, Pb < 2.4
9/3/2004	9/3/2004	WTP-003-090304	NB-A000302	**Effluent Sample** - Second day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr = 2.0, Pb < 2.4
9/8/2004	9/9/2004	WTP-003-090804	NB-A000406	**Effluent Sample** - Third day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr = 2.8, Pb < 2.4
9/9/2004	9/10/2004	WTP-003-090904	NB-A000502	**Effluent Sample** - Fourth day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr = 1.4, Pb < 2.4
9/9/2004	9/10/2004	WTP-003-090904	NB-A000504	**Effluent Sample** - Fourth day, First Week, CDF Sampling, Duplicate Sample	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr = 2.5, Pb < 2.4
9/10/2004	9/13/2004	WTP-003-091004	NB-A000606	**Effluent Sample** - fifth day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr = 3.4, Pb < 2.4
First Week of Weekly Sampling at CDF (PCBs, Cu, Cd, Cr, and Pb only) Effluent							
9/16/2004	9/20/2004	WTP-003-091604	NB-A001102	**Effluent Sample** - Third day, First Week, CDF Sampling	PCBs, Cu, Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr < 1.2, Cu = 4.2, Pb < 2.4
First Week of Daily Sampling at DMU-2 (Effluent)							
9/23/2004	9/24/2004	WTP-003-092304	NB-A001505	**Effluent Sample** - First day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.3	All PCBs <0.050 and Copper <2.3
9/24/2004	9/27/2004	WTP-003-092404	NB-A001601	**Effluent Sample** - Second day, First Week, DMU-2 Sampling, extra sample collected for MS/MSD analysis	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper 2.4	All PCBs <0.050 and Copper 2.4

Table J-6
Wastewater Treatment Plant Sampling and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Analysis	Preliminary Unvalidated Analytical Results (µg/L)	Final Unvalidated Analytical Results (µg/L)
9/27/2004	9/28/2004	WTP-003-092704	NB-A001705	**Effluent Sample** - Third day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.6	All PCBs <0.050 and Copper <2.6
9/28/2004	9/29/2004	WTP-003-092804	NB-A001801	**Effluent Sample** - Fourth day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.6	All PCBs <0.050 and Copper <2.6
9/30/2004	10/1/2004	WTP-003-093004	NB-A001905	**Effluent Sample** - Fifth day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.6	All PCBs <0.050 and Copper <2.6
9/23/2004	9/24/2004	WTP-003-092304	NB-A001506	**Effluent Sample** - First day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr < 1.2, Pb < 2.4
9/24/2004	9/27/2004	WTP-003-092404	NB-A001602	**Effluent Sample** - Second day, First Week, DMU-2 Sampling, extra sample collected for MS/MSD analysis	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr < 1.2, Pb < 1.5
9/27/2004	9/28/2004	WTP-003-092704	NB-A001706	**Effluent Sample** - Third day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr < 1.1, Pb < 1.5
9/28/2004	9/29/2004	WTP-003-092804	NB-A001802	**Effluent Sample** - Fourth day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr < 1.1, Pb < 1.5
9/30/2004	10/1/2004	WTP-003-093004	NB-A001906	**Effluent Sample** - Fifth day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd = 0.54, Cr <1.1, Pb <1.2
First Month of Weekly Sampling at DMU-2 (Effluent)							
10/6/2004	10/7/2004	WTP-003-100604	NB-A003602	**Effluent Sample** - First Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.051; Cd < 0.50; Cr < 0.90, Cu = 2.4; Pb < 2.1
10/15/2004	10/18/2004	WTP-003-101504	NB-A004902	**Effluent Sample** - Second Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.051; Cd < 0.50; Cr < 0.90, Cu < 2.3; Pb < 2.1
10/15/2004	10/18/2004	WTP-003-101504REP	NB-A004903	**Effluent Sample** - Second Week Sampling Event for the First Month (Duplicate Sample)	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.051; Cd < 0.50; Cr = 1.5; Cu = 2.3; Pb < 2.1
10/20/2004	10/21/2004	WTP-003-102004	NB-A005702	**Effluent Sample** - Third Week Sampling Event for the First Month (Duplicate Sample)	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.057; Cd < 0.50; Cr < 0.90, Cu < 2.3; Pb < 2.1
10/28/2004	10/29/2004	WTP-003-102804	NB-A006502	**Effluent Sample** - Fourth Week Sampling Event for the First Month (MS/MSD also collected)	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs < 0.050; Cd < 0.50; Cr < 0.90; Cu < 2.3; Pb < 2.1
First Month of Monthly Sampling at DMU-2 (Effluent)							
11/3/2004	11/4/2004	WTP-003-110304	NB-A007503	**Effluent Sample** - First Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs < 0.051; Cd < 0.50; Cr = 2.6; Cu = 4.5, Pb < 1.2

Table J-6
Wastewater Treatment Plant Sampling and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Analysis	Preliminary Unvalidated Analytical Results (µg/L)	Final Unvalidated Analytical Results (µg/L)
Midpoint Samples Analysis							
First Week of Daily Sampling at CDF (Midpoint)							
9/2/2004	9/3/2004	WTP-002-090204	NB-A000203	**Midpoint Sample** - First day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper <2.3	All PCBs <0.051 and Copper <2.3
9/8/2004	9/9/2004	WTP-002-090804	NB-A000403	**Midpoint Sample** - Third day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper 4.9	All PCBs <0.051 and Copper 4.9
9/13/2004	9/14/2004	WTP-002-091304	NB-A001003	**Midpoint Sample** - Fifth day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.051 and Copper 3.8	All PCBs <0.051 and Copper 3.8
9/2/2004	9/3/2004	WTP-002-090204	NB-A000204	**Midpoint Sample** - First day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd <1.1, Cr = 1.4, Pb <2.4
9/8/2004	9/9/2004	WTP-002-090804	NB-A000404	**Midpoint Sample** - Third day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr = < 1.1, Pb <2.4
9/13/2004	9/14/2004	WTP-002-091304	NB-A001004	**Midpoint Sample** - Fifth day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT	Cd <1.1, Cr <1.2, Pb <2.4	Cd <1.1, Cr <1.2, Pb <2.4
First Week of Sampling For Weekly Sampling at CDF (Midpoint)							
9/16/2004	9/20/2004	WTP-002-091604	NB-A001101	**Midpoint Sample** - Third day, First Week, CDF Sampling	PCBs, Cu, Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr < 1.2, Cu < 2.3, Pb < 2.4
First Week of Daily Sampling at DMU-2 (Midpoint)							
9/23/2004	9/24/2004	WTP-002-092304	NB-A001503	**Midpoint Sample** - First day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.3	All PCBs <0.050 and Copper <2.3
9/27/2004	9/28/2004	WTP-002-092704	NB-A001703	**Midpoint Sample** - Third day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper 3.2	All PCBs <0.050 and Copper 3.2
9/30/2004	10/1/2004	WTP-002-093004	NB-A001903	**Midpoint Sample** - Fifth day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	All PCBs <0.050 and Copper <2.6	All PCBs <0.050 and Copper <2.6
9/23/2004	9/24/2004	WTP-002-092304	NB-A001504	**Midpoint Sample** - First day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr < 1.2, Pb < 2.4
9/27/2004	9/28/2004	WTP-002-092704	NB-A001704	**Midpoint Sample** - Third day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.5, Cr < 1.1, Pb < 1.5
9/30/2004	10/1/2004	WTP-002-093004	NB-A001904	**Midpoint Sample** - Fifth day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr < 1.1, Pb < 1.2
First Month of Weekly Sampling at DMU-2 (Midpoint)							
10/6/2004	10/7/2004	WTP-002-100604	NB-A003601	**Mid Point Sample** - First Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.051; Cd < 0.50; Cr < 0.90, Cu = 4.0; Pb < 2.1
10/15/2004	10/18/2004	WTP-002-101504	NB-A004901	**Mid Point Sample** - Second Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs < 0.051; Cd = 1.3, Cr = 4.0, Cu = 7.9; Pb < 2.1

Table J-6
Wastewater Treatment Plant Sampling and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Analysis	Preliminary Unvalidated Analytical Results (µg/L)	Final Unvalidated Analytical Results (µg/L)
10/20/2004	10/21/2004	WTP-002-102004	NB-A005701	**Mid Point Sample** - Third Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs <0.052; Cd < 0.50; Cr < 0.90, Cu = 3.2; Pb < 2.1
10/28/2004	10/29/2004	WTP-002-102804	NB-A006501	**Mid Point Sample** - Fourth Week Sampling Event for the First Month	PCBs, Cu, Cd, Cr, and Pb - 14 day TAT		All PCBs < 0.052; Cd < 0.50; Cr < 0.90; Cu < 2.3; Pb < 2.1
First Month of Monthly Sampling at DMU-2 (Mid-Point)							
11/3/2004	11/4/2004	WTP-002-110304	NB-A007502	**Mid Point Sample -** First Month of the Monthly Sampling Events	PCBs, Cu only - 14 day TAT		All PCBs < 0.052; Cu = 5.5
Influent Samples Analysis							
First Week of Daily Sampling at CDF (Influent)							
9/2/2004	9/3/2004	WTP-001-090204	NB-A000201	**Influent Sample** - First day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	Aroclor 1242 = 1.4J and Copper 9.6	Aroclor 1242 = 1.2 J and Copper 9.6
9/8/2004	9/9/2004	WTP-001-090804	NB-A000401	**Influent Sample** - Third day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	Aroclor 1242 = 2 and Copper 61.6	Aroclor 1242 = 1.8 J, Aroclor 1254 = 0.89 and Copper 61.6
9/13/2004	9/14/2004	WTP-001-091304	NB-A001001	**Influent Sample** - fifth day, First Week, CDF Sampling	PCBs and Cu only - 24 hour TAT	Aroclor 1242 = 1.1 and Copper = 12.3	Aroclor 1242 = 1.1 and Copper = 12.3
9/2/2004	9/3/2004	WTP-001-090204	NB-A000202	**Influent Sample** - First day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 1.1, Cr = 2.0, Pb = 3.9
9/8/2004	9/9/2004	WTP-001-090804	NB-A000402	**Influent Sample** - Third day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd < 0.6, Cr = 8.6, Pb = 12.9
9/13/2004	9/14/2004	WTP-001-091304	NB-A001002	**Influent Sample** - fifth day, First Week, CDF Sampling	Cd, Cr, and Pb only - 14 day TAT	Cd <1.1, Cr = 2.6, Pb <2.4	Cd <1.1, Cr = 2.6, Pb <2.4
First Week of Daily Sampling at DMU-2 (Influent)							
9/23/2004	9/24/2004	WTP-001-092304	NB-A001501	**Influent Sample** - First day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	Aroclor-1242 = 42, and Copper = 95.4	Aroclor-1242 = 42, and Copper = 95.4
9/27/2004	9/28/2004	WTP-001-092704	NB-A001701	**Influent Sample** - Third day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	Aroclor-1242 = 140 and Copper = 49.2	Aroclor-1242 = 140 and Copper = 49.2
9/30/2004	10/1/2004	WTP-001-093004	NB-A001901	**Influent Sample** - fifth day, First Week, DMU-2 Sampling	PCBs and Cu only - 24 hour TAT	Aroclor - 1242 = 170, Aroclor - 1260 = 86, and Copper = 83	Aroclor - 1242 = 170, Aroclor - 1260 = 86, and Copper = 83
9/23/2004	9/24/2004	WTP-001-092304	NB-A001502	**Influent Sample** - First day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd = 1.6, Cr = 28.8, Pb = 78.5
9/27/2004	9/28/2004	WTP-001-092704	NB-A001702	**Influent Sample** - Third day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd = 1.5, Cr = 36.9, Pb = 74.3
9/30/2004	10/1/2004	WTP-001-093004	NB-A001902	**Influent Sample** - fifth day, First Week, DMU-2 Sampling	Cd, Cr, and Pb only - 14 day TAT		Cd = 1.6, Cr = 25.2, Pb = 58.3

Table J-6
Wastewater Treatment Plant Sampling and Analytical Summary
New Bedford Harbor Superfund Site 2004 Season

Sample Date	Date Shipped	Location ID	Control Number	Purpose of Sample	Analysis	Preliminary Unvalidated Analytical Results (µg/L)	Final Unvalidated Analytical Results (µg/L)
First Month of Monthly Sampling at DMU-2 (Influent)							
11/3/2004	11/4/2004	WTP-001-110304	NB-A007501	**Influent Sample - First Month of Monthly**	PCBs and Cd, Cr, Cu and Pb only - 14 day TAT		Aroclor-1242 = 30; Cd < 0.50, Cr = 3.3, Cu = 12.0, Pb < 1.2
Equipment Blank for Effluent Sample Container							
9/2/2004	9/3/2004	WTP-003-EB	NB-A000101	**Equipment Blank for Effluent Sample Container**	PCBs and Cu only - 24 hour TAT	All PCBs <0.054, Cd <1.1, Cr <1.2, Cu <2.3, and <2.4	All PCBs <0.054, Cd <1.1, Cr <1.2, Cu <2.3, and <2.4

Notes:
All units in micrograms per liter
All results are unvalidated
Cd = cadmium
CDF = Confined Disposal Facility
CR = chromium
CU = copper
ID = identification
J - estimated values
MS/MSD = matrix spike/matrix spike duplicate
PCB = polychlorinated biphenyl
Pb = lead
TAT = turn around time
µg/L = micrograms per liter

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (^{o}C)	DO	ORP (mV)	Comments
9/2/04	Effluent	1543	HORIBA U10	6.64	11000	10	25.7	5.65 mg/L	NM	
9/2/04	Mid-Point	1555	HORIBA U10	6.90	11400	10	25.5	4.04 mg/L	NM	
9/2/04	Influent	1600	HORIBA U10	6.50	10500	10	25.7	6.60 mg/L	NM	
9/3/04	Effluent	1042	HORIBA U10	5.71	10400	10	23.3	5.74 mg/L	NM	
9/9/04	Effluent	1205	HORIBA U10	7.27	16700	10	25.1	4.57 mg/L	NM	
9/9/04	Effluent	1255	HORIBA U10	8.46	17900	10	25.6	11.01 mg/L	NM	
9/9/04	Effluent	1355	HORIBA U10	9.79	18900	10	25.9	11.21 mg/L	NM	
9/9/04	Effluent	1655	HORIBA U10	9.86	17200	10	26.0	2.61 mg/L	NM	
9/9/04	Effluent	1745	HORIBA U10	10.26	17100	10	25.9	10.57 mg/L	NM	
9/10/04	Effluent	745	HORIBA U10	6.35	17400	8	24.0	8.48 mg/L	NM	
9/10/04	Effluent	845	HORIBA U10	8.48	17400	4	24.9	4.37 mg/L	NM	
9/10/04	Effluent	945	HORIBA U10	9.69	17900	5	25.7	6.72 mg/L	NM	
9/10/04	Effluent	1045	HORIBA U10	9.71	18100	61	25.7	11.09 mg/L	NM	
9/10/04	Effluent	1145	HORIBA U10	10.14	17700	42	25.5	14.57 mg/L	NM	
9/10/04	Effluent	1245	HORIBA U10	10.13	17800	42	25.8	15.22 mg/L	NM	
9/10/04	Effluent	1345	HORIBA U10	10.20	17900	51	25.8	17.94 mg/L	NM	
9/10/04	Effluent	1445	HORIBA U10	10.28	17900	10	25.9	14.21 mg/L	NM	
9/10/04	Effluent	1610	HORIBA U10	10.19	17800	10	26.0	9.28 mg/L	NM	
9/10/04	Mid-Point	1655	HORIBA U10	10.72	16600	10	26.0	14.46 mg/L	NM	
9/13/04	Influent	1625	HORIBA U10	9.43	13900	10	24.1	10.13 mg/L	NM	
9/13/04	Mid-Point	1635	HORIBA U10	10.31	17600	10	24.2	10.71 mg/L	NM	
9/16/04	Effluent	945	HORIBA U10	6.79	19300	2	22.8	15.91 mg/L	NM	
9/16/04	Effluent	1120	HORIBA U10	10.19 *	18900	2	23.0	18.9 mg/L	NM	
9/16/04	Effluent	1320	HORIBA U10	10.35 *	18300	4	23.0	19.99 mg/L	NM	
9/16/04	Mid-Point	1330	HORIBA U10	10.57	18700	3	23.2	17.30 mg/L	NM	
9/16/04	Effluent	1445	HORIBA U10	10.61 *	18300	2	23.1	19.99 mg/L	NM	
9/23/04	Effluent	1410	YSI 6920	8.41	26007	11.3	23.66	48.80%	219.3	ORP on YSI 6920 so will collect
9/23/04	Effluent	1430	YSI 6920	8.46	26750	71.2	23.78	60.90%	292	data when using the YSI 6920
9/23/04	Effluent	1445	YSI 6920	8.46	26865	147.5	23.85	61.80%	307.4	
9/23/04	Effluent	1500	YSI 6920	8.46	26872	74.9	23.84	62.80%	303.2	
9/23/04	Effluent	1515	YSI 6920	8.46	26880	110.2	23.84	62.70%	287.9	
9/23/04	Effluent	1530	YSI 6920	8.44	26774	123.4	23.79	56.20%	282.3	

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (^{o}C)	DO	ORP (mV)	Comments
9/23/04	Effluent	1615	YSI 6920	8.45	28222	72.9	23.83	67.30%	258.3	
9/23/04	Influent	1625	YSI 6920	7.40	31667	43.3	23.06	78.30%	-35.4	
9/23/04	Effluent	1645	YSI 6920	8.44	28954	174.6	23.75	68.00%	237.4	
9/23/04	Mid-Point	1705	YSI 6920	8.23	29404	2.7	23.65	29.80%	257.7	
9/23/04	Effluent	1715	YSI 6920	8.43	29177	146.8	23.74	77.10%	234.7	
9/23/04	Effluent	1730	YSI 6920	8.45	28978	147.5	23.36	67.40%	223.9	
9/23/04	Effluent	1745	YSI 6920	8.42	29411	183.2	23.78	72.50%	222.7	
9/23/04	Effluent	1800	YSI 6920	8.40	29157	82.6	23.37	68.50%	223.3	
9/23/04	Effluent	1815	YSI 6920	8.40	29767	130.4	23.75	68.90%	224.2	
9/23/04	Effluent	1830	YSI 6920	8.40	30014	109.1	23.81	71.10%	224.3	
9/24/04	Effluent	945	YSI 6920	8.25	27796	157.7	19.20	58.20%	281.2	
9/24/04	Effluent	1015	YSI 6920	8.26	29570	55.2	20.93	60.60%	269.4	
9/24/04	Effluent	1045	YSI 6920	8.29	30709	45.1	22.40	69.70%	261.2	
9/24/04	Effluent	1115	YSI 6920	8.26	31813	50.4	23.06	70.60%	262.4	
9/24/04	Effluent	1145	YSI 6920	8.26	32351	23.6	23.22	71.60%	269.1	
9/24/04	Effluent	1215	YSI 6920	8.20	32456	140.3	22.92	69.50%	275.7	
9/24/04	Effluent	1245	YSI 6920	8.19	32374	320.5	22.44	69.20%	280.1	
9/24/04	Effluent	1445	YSI 6920	8.18	32420	199.7	22.45	68.50%	285.3	
9/24/04	Effluent	1515	YSI 6920	8.26	32461	189.3	22.83	72.90%	278.2	
9/24/04	Effluent	1545	YSI 6920	8.26	33869	185.2	22.80	70.20%	273.9	
9/24/04	Effluent	1615	YSI 6920	8.31	33027	335.2	23.39	73.00%	269.7	
9/24/04	Effluent	1645	YSI 6920	8.32	33005	354.7	23.35	71.90%	267.7	
9/24/04	Effluent	1715	YSI 6920	8.30	32368	169.3	23.16	69.80%	264.7	
9/24/04	Effluent	1745	YSI 6920	8.37	32557	207.5	23.46	74.10%	263.9	
9/27/04	Effluent	830	YSI 6920	8.34	31497	17.6	22.26	70.20%	262.8	
9/27/04	Effluent	900	YSI 6920	8.32	31255	15.2	21.69	68.40%	312.2	
9/27/04	Effluent	930	YSI 6920	8.33	30693	102.3	20.85	69.80%	297.4	
9/27/04	Effluent	1100	YSI 6920	8.26	30396	173.8	21.12	68.10%	279.0	
9/27/04	Effluent	1130	YSI 6920	8.20	30068	185.7	22.02	68.50%	286.0	
9/27/04	Effluent	1200	YSI 6920	8.18	30128	199.3	21.87	65.70%	291.4	
9/27/04	Effluent	1330	YSI 6920	8.17	30240	164.4	21.86	74.80%	289.1	
9/27/04	Influent	1345	YSI 6920	7.43	29804	71.4	22.91	73.30%	7.2	

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (^oC)	DO	ORP (mV)	Comments
9/27/04	Mid-Point	1405	YSI 6920	8.20	31086	3.8	22.57	28.60%	213.8	
9/27/04	Effluent	1640	YSI 6920	8.14	31127	83.7	22.90	71.10%	351.9	
9/28/04	Effluent	1030	YSI 6920	8.13	22661	53.2	23.05	3.70%	319.5	Turbidity data suspect
9/28/04	Effluent	1100	YSI 6920	8.20	26632	3266.7	23.43	4.20%	306.9	due to use of flow through cell
9/28/04	Effluent	1130	YSI 6920	8.21	26506	2290.7	23.45	4.20%	297.1	and sampler configuration
9/28/04	Effluent	1200	YSI 6920	8.19	26498	803.7	23.45	4.40%	297.5	will compare data w/FTC & w/o
9/28/04	Effluent	1230	YSI 6920	8.19	26537	7.2	23.53	4.30%	297.4	with Flow Through Cell
9/28/04	Effluent	1300	YSI 6920	8.19	26861	105.2	23.72	4.30%	297.8	with FTC
9/28/04	Effluent	1300	YSI 6920	8.22	26768	0.1	23.72	5.70%	299.9	w/o FTC
9/28/04	Effluent	1345	YSI 6920	8.19	27895	3268.2	23.46	4.50%	297.1	with FTC
9/28/04	Effluent	1415	YSI 6920	8.21	28502	39.2	23.68	4.60%	307.9	with FTC
9/28/04	Effluent	1415	YSI 6920	8.21	28648	0	23.36	5.60%	308.5	w/o FTC
9/28/04	Effluent	1600	YSI 6920	8.24	29598	0.1	23.00	4.70%	301.9	w/o FTC
9/28/04	Effluent	1600	YSI 6920	8.24	29561	93.5	23.37	4.90%	302.4	with FTC
9/29/04	Effluent	1500	YSI 6920	8.2	23367	1.9	21.68	80.70%	337.9	w/o FTC
9/30/04	Effluent	930	YSI 6920	8.23	21277	2.2	20.51	9.41 mg/L	235.5	No longer using FTC. Skewed
9/30/04	Effluent	1000	YSI 6920	8.17	20380	2.1	20.38	9.36 mg/L	281.3	the data for Turbidity and DO
9/30/04	Effluent	1030	YSI 6920	8.16	19812	2.0	20.37	9.07 mg/L	305.2	
9/30/04	Effluent	1100	YSI 6920	8.17	19766	1.9	21.24	10.61 mg/L	324.4	
9/30/04	Effluent	1130	YSI 6920	8.18	19670	1.9	21.33	11.52 mg/L	334.5	
9/30/04	Effluent	1200	YSI 6920	8.18	19542	1.9	20.96	9.73 mg/L	342.6	
9/30/04	Effluent	1230	YSI 6920	8.18	19589	1.9	20.84	9.72 mg/L	343.1	
9/30/04	Effluent	1400	YSI 6920	8.22	20773	1.9	20.92	9.46 mg/L	278.9	
9/30/04	Effluent	1430	YSI 6920	8.27	21759	1.9	20.88	8.95 mg/L	342.0	
9/30/04	Influent	1500	YSI 6920	7.33	25378	55.9	20.79	9.60 mg/L	82.6	
9/30/04	Effluent	1530	YSI 6920	8.01	22826	1.8	20.48	9.36 mg/L	323.1	
9/30/04	Mid-Point	1600	YSI 6920	8.54	25093	2.1	21.02	4.45 mg/L	264.3	
9/30/04	Effluent	1630	YSI 6920	8.35	23832	1.8	20.79	9.41 mg/L	335.7	
9/30/04	Effluent	1700	YSI 6920	8.33	24256	2.0	20.47	9.52 mg/L	358.8	
9/30/04	Effluent	1730	YSI 6920	8.22	22941	2.1	19.07	7.76 mg/L	352.5	
9/30/04	Effluent	1800	YSI 6920	8.34	24156	1.9	20.39	10.49 mg/L	351.2	
9/30/04	Effluent	1830	YSI 6920	8.37	24122	1.9	20.16	9.42 mg/L	348.7	

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (^oC)	DO	ORP (mV)	Comments
10/6/04	Effluent	1100	YSI 6920	7.95	26565	2.6	18.24	23.46 mg/L	380.8	
10/6/04	Effluent	1130	YSI 6920	7.94	27333	2.3	18.84	23.22 mg/L	360.8	
10/6/04	Effluent	1200	YSI 6920	7.92	27452	2.1	18.75	22.23 mg/L	358.6	
10/6/04	Effluent	1230	YSI 6920	7.89	27585	2.1	18.88	26.87 mg/L	362.2	
10/6/04	Effluent	1300	YSI 6920	7.89	27640	2.2	18.89	20.98 mg/L	367.9	
10/6/04	Effluent	1340	YSI 6920	7.88	27983	2.2	19.40	22.78 mg/L	381.5	
10/6/04	Effluent	1400	YSI 6920	7.89	27851	2.2	18.87	18.57 mg/L	380.8	
10/6/04	Effluent	1430	YSI 6920	7.88	28096	2.2	19.48	20.67 mg/L	387.2	
10/6/04	Effluent	1630	YSI 6920	7.89	27416	2.3	19.33	21.98 mg/L	406.2	
10/6/04	Mid-Point	1700	YSI 6920	7.77	25981	2.2	19.85	9.46 mg/L	372.6	
10/6/04	Effluent	1730	YSI 6920	7.83	26694	2.2	20.17	20.21 mg/L	319.4	
10/6/04	Effluent	1800	YSI 6920	7.87	26285	2.3	20.05	19.48 mg/L	383.0	
10/6/04	Effluent	1830	YSI 6920	7.88	26158	2.4	19.80	22.21 mg/L	393.1	
10/15/04	Effluent	845	YSI 6920	7.47	32830	1.8	18.6	6.18 mg/L	265.2	
10/15/04	Effluent	915	YSI 6920	7.75	32803	1.7	18.27	6.24 mg/L	252	
10/15/04	Effluent	945	YSI 6920	7.74	32894	1.4	18.52	6.41 mg/L	254.4	
10/15/04	Effluent	1015	YSI 6920	7.76	32799	1.5	18.67	6.27 mg/L	252.5	
10/15/04	Effluent	1045	YSI 6920	7.75	32131	1.4	18.72	6.59 mg/L	256.8	
10/15/04	Effluent	1115	YSI 6920	7.75	31937	1.2	18.88	4.34 mg/L	248.2	
10/15/04	Effluent	1145	YSI 6920	7.72	32128	1.9	18.81	5.37 mg/L	237.7	
10/15/04	Effluent	1215	YSI 6920	7.71	32171	1.4	18.44	5.51 mg/L	226.4	
10/15/04	Effluent	1245	YSI 6920	7.77	32874	1.4	18.74	5.54 mg/L	239.7	
10/15/04	Effluent	1350	YSI 6920	7.93	33987	1.4	18.95	9.39 mg/L	259.2	
10/15/04	Effluent	1415	YSI 6920	7.87	33194	1.6	18.01	7.73 mg/L	258.5	
10/15/04	Effluent	1445	YSI 6920	7.95	34334	1.4	18.82	6.22 mg/L	257	
10/15/04	Effluent	1545	YSI 6920	8.06	34214	1.4	18.12	6.7 mg/L	256.2	
10/15/04	Mid-Point	1600	YSI 6920	8.24	34799	1.5	18.94	4.87 mg/L	257.2	
10/20/04	Effluent	1105	YSI 6920	8.27	30063	1.6	17.1	6.45 mg/L	389.1	
10/20/04	Effluent	1130	YSI 6920	8.47	30156	1.4	17.18	6.1 mg/L	317.2	
10/20/04	Effluent	1200	YSI 6920	8.46	29175	1.5	15.56	5.35 mg/L	290.9	
10/20/04	Effluent	1230	YSI 6920	8.5	29798	1.4	16.55	5.79 mg/L	277.7	
10/20/04	Effluent	1300	YSI 6920	8.48	30043	1.5	17.03	5.47 mg/L	271.3	

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (^oC)	DO	ORP (mV)	Comments
10/20/04	Effluent	1400	YSI 6920	8.49	30147	1.4	16.83	5.92 mg/L	274.6	
10/20/04	Effluent	1430	YSI 6920	8.5	29905	1.6	16.75	6.34 mg/L	261.3	
10/20/04	Effluent	1500	YSI 6920	8.5	30163	1.5	17.01	6.85 mg/L	263.5	
10/20/04	Mid-Point	1630	YSI 6920	8.64	31626	1.8	16.78	4.72 mg/L	265.4	
10/20/04	Effluent	1700	YSI 6920	8.59	31141	1.5	16.66	6.07 mg/L	254.8	
10/20/04	Effluent	1730	YSI 6920	8.59	31215	1.5	16.73	6.13 mg/L	258.7	
10/20/04	Effluent	1800	YSI 6920	8.6	31317	1.7	16.35	6.14 mg/L	257.7	
10/20/04	Effluent	1830	YSI 6920	8.59	31436	1.6	16.54	6.11 mg/L	258.4	
10/28/04	Effluent	1000	YSI 6920	7.46	31086	1.9	15.36	6.6 mg/L	382.7	
10/28/04	Effluent	1030	YSI 6920	7.65	31534	1.6	15.45	6.27 mg/L	328.6	
10/28/04	Effluent	1100	YSI 6920	7.64	31386	1.7	15.23	6.17 mg/L	293.9	
10/28/04	Effluent	1130	YSI 6920	7.58	30684	1.9	14.18	5.43 mg/L	272.1	
10/28/04	Effluent	1200	YSI 6920	7.59	31407	1.6	15.43	6.19 mg/L	265.6	
10/28/04	Effluent	1230	YSI 6920	7.59	31301	1.6	15.25	5.69 mg/L	248.4	
10/28/04	Effluent	1300	YSI 6920	7.6	31359	1.5	15.49	6.21 mg/L	238.1	
10/28/04	Effluent	1400	YSI 6920	7.57	31209	1.6	15.37	5.29 mg/L	252.7	
10/28/04	Effluent	1430	YSI 6920	7.56	31256	1.5	15.4	5.69 mg/L	232	
10/28/04	Effluent	1500	YSI 6920	7.56	31182	1.9	15.26	5.59 mg/L	227.4	
10/28/04	Effluent	1530	YSI 6920	7.56	31216	1.4	15.29	5.6 mg/L	230.4	
10/28/04	Mid-Point	1600	YSI 6920	7.2	31573	1.7	15.37	5.33 mg/L	238	
10/28/04	Effluent	1630	YSI 6920	7.39	31273	1.2	15.18	6.9 mg/L	244.8	
10/28/04	Effluent	1700	YSI 6920	7.55	31347	1.1	15.11	5.94 mg/L	226	
10/28/04	Effluent	1730	YSI 6920	7.58	31420	1.6	15	5.68 mg/L	231.9	
10/28/04	Effluent	1800	YSI 6920	7.6	31376	2.8	14.79	5.53 mg/L	232.5	
11/3/04	Effluent	920	YSI 6920	7.07	29106	1.9	15.89	9.96 mg/L	309.1	
11/3/04	Effluent	945	YSI 6920	7.33	30722	1.6	15.8	9.63 mg/L	265.9	
11/3/04	Effluent	1015	YSI 6920	7.36	30627	1.5	15.67	9.29 mg/L	234.8	
11/3/04	Effluent	1045	YSI 6920	7.38	30435	1.6	15.56	9.79 mg/L	227.1	
11/3/04	Effluent	1115	YSI 6920	7.38	30175	1.1	15.35	9.33 mg/L	226.7	
11/3/04	Effluent	1145	YSI 6920	7.38	30074	1.7	15.4	9.95 mg/L	220.9	
11/3/04	Effluent	1215	YSI 6920	7.39	29844	1.4	15.34	9.75 mg/L	216.7	
11/3/04	Effluent	1245	YSI 6920	7.41	29643	1.4	15.34	9.67 mg/L	203	

Table J-7
Wastewater Treatment Plant Water Quality Data
New Bedford Harbor Superfund Site 2004 Season

Date	Location	Time	Meter	pH	Specific Conductivity (µS/cm)	Turbidity (NTU)	Temp (°C)	DO	ORP (mV)	Comments
11/3/04	Effluent	1315	YSI 6920	7.43	29521	1.2	15.41	9.85 mg/L	224.4	
11/3/04	Effluent	1545	YSI 6920	7.49	27732	1.4	15.52	9.04 mg/L	284.6	
11/3/04	influent	1600	YSI 6920	7.17	30549	41.7	15.15	8.99 mg/L	200.4	
11/3/04	Effluent	1615	YSI 6920	7.41	29839	3.6	15.3	8.86 mg/L	172.5	
11/3/04	Mid-Point	1630	YSI 6920	7.35	30782	1.8	15.1	7.71 mg/L	217.7	
11/3/04	Effluent	1645	YSI 6920	7.48	30179	1.9	15.29	8.93 mg/L	242.4	
11/3/04	Effluent	1715	YSI 6920	7.54	30087	1.3	15.09	8.47 mg/L	255.6	
11/3/04	Effluent	1745	YSI 6920	7.57	30437	1.5	15.13	8.71 mg/L	261.6	

Notes:
°C = degrees Celsius
DO = dissolved oxygen
FTC = flow through cell
mg/L = milligrams per liter
mV = millivolts
NM = not measured
NTU = nephelometric turbidity units
ORP = oxidation-reduction potential
pH = negative log hydrogen ion concentration
w/ = with
w/o = without
µs/cm = microsiemens per centimeter
* = since the pH readings collected using the Horiba U-10 were believed to be incorrect, the water quality meter used was changed to a YSI 6920 water quality instrument.

ATTACHMENT K

New Bedford Harbor Superfund Site 2004

Health and Safety Statistics

Attachment K
New Bedford Harbor Superfund Site 2004
Health and Safety Statistics

Labor Hours (site wide) as of November 18, 2004	72,110 hrs
Injuries	
First Aid	4
Doctor's Visits (E-1)	0
Lost Time Injuries	0
Fatalities	0
Incidents	
Hydraulic Fluid Spill (approximately 10 gallons petroleum-based)	7/29/04
Crane Near Miss	8/2/04
Potential Hydrogen Sulfide Overexposure	9/8/04
Hydraulic Fluid Spill (approximately 10 gallons vegetable-based)	11/9/04

Plans Developed on Site
1. Master Site Safety and Health Plan
2. Emergency Response and Contingency Plan
3. Mobilization Addendum
4. Hydraulic Dredging O&M Addendum
5. Sediment Desanding O&M Addendum
6. Dewatering O&M Addendum
7. Waste Water Treatment Plant O&M Addendum
8. Ambient Air Monitoring Plan/Test Procedure

Integrated Samples	**# Collected**
PCB Ambient Program	86
PCB Personnel Exposure	76
Hydrogen Sulfide	8
Hydrogen Cyanide	7

Site Specific Training	**# Trained**
OSHA First Responder	10
DOT Transportation and Security Plan	8
Site Orientation	61

Activity Hazard Analyses Developed
1. Pipe Fabrication and Leak Detection
2. Offloading/Assembling Marine Equipment
3. Offloading/Assembling Dewatering Equipment
4. Offloading/Assembling WTP Equipment
5. Refueling Equipment
6. Sprung Building Erection
7. Pipeline Installation
8. Silt Curtain Installation
9. Placement/Tie-down Debris Removal Operations
10 Dewatering Utility Connections
11 Offloading/Staging Process Chemicals
12. Offloading Construction Equipment & Materials
13. Offloading/Assembling Desanding Equipment
14. Desanding Utility Connections
15. Ambient Air Monitoring
16. LOTO Procedure and 23 Checklists
17. Ferric Sulfate Injection System
18. Level B Operations
19. Sediment Sampling
20. O&M of dredges
21. O&M of Desanding Facility
22. O&M of Dewatering Facility
23. O&M of WWTP

Attachment K
New Bedford Harbor Superfund Site 2004
Health and Safety Statistics

The Safety Observation Report (SOR) is a tool within the zero accident process that allows anyone on the Project to document identified unsafe conditions, unsafe acts or acknowledges good work practices. The second portion of the tool is to implement or recommend corrective measures as applicable. The chart below shows the distribution of SORs by observation for the 2004 season.